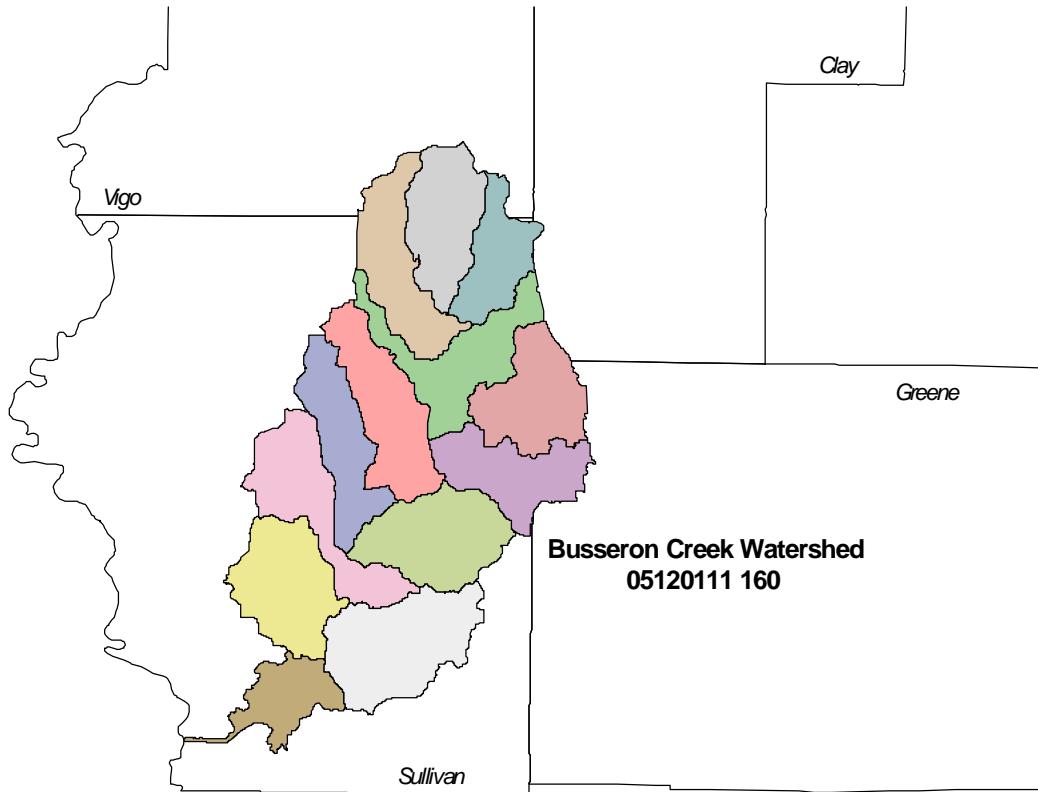


# 2000 Busseron Creek Watershed Source Identification Study

By  
Carl C. Christensen, Environmental Manager

Geographic Information Systems  
Stephanie Worden, Governor's Internship Program

Compilation and development of the final report was a primary responsibility of the Surveys Section.  
Arthur C. Garceau, Surveys Section Chief



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## ABSTRACT

During 1999, the Surveys Section, Assessment Branch, Office of Water Quality observed surface water quality violations at three sampling locations in the Busseron Creek Watershed, 05120111160. Two of these sites were on Busseron Creek. These two sites, WBU160-0002 and WBU160-0004, were impaired for sulfate and total dissolved solids (TDS). A third sampling location, WBU160-0006, was on Buck Creek and was impaired for ammonia. A source identification study comprised of 115 sites was planned to determine the sources of impairment and the magnitude these sources were impacting Busseron Creek for sulfate and TDS, and Buck Creek for ammonia. Analytic samples and field measurements were taken and compared to the surface water quality standards to determine where water quality violations occurred. Flow measurements were also taken, when possible, to determine the load of TDS and sulfate a tributary system was contributing to Busseron Creek.

The study successfully located impaired waterbodies within the Busseron Creek Watershed and determined to what extent these waterbodies were impairing Busseron Creek. The most impaired watershed was the Sulphur Creek Watershed, 05120111160040. Although Sulphur Creek's sulfate and TDS loads were not high enough to cause water quality standard violations in Busseron Creek at the time of the study, Sulphur Creek had numerous violations for sulfate, TDS, pH, and heavy metals. The causes of these impairments were attributed to acid mine drainage.

The Big Branch-Mud Creek Watershed, 05120111160060, was impaired at most sampling sites for both TDS and sulfate. This watershed was also the greatest contributor of TDS and sulfate discharge in the Busseron Creek Watershed. About 19% of the TDS output and 55% of the sulfate output of the Busseron Creek Watershed was attributed to this watershed.

The Buttermilk Creek Watershed, 05120111160090, was impaired at most sites for either TDS, sulfate, or both. Impairments in Buttermilk Creek diminished in magnitude and frequency as the water flowed further downstream. Only sulfate exceeded the surface water quality standard at the final Buttermilk Creek sampling site.

No ammonia violations were observed in either Buck Creek or the rest of the Busseron Creek Watershed during 2000. The violations observed in 1999 may have been the result of cattle wading in Buck Creek upstream of WBU160-0006 which was observed during the project's presurvey work.



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## INTRODUCTION

In 1999, the Surveys Section, Assessment Branch, Office of Water Quality, sampled locations in the Busseron Creek Watershed, 05120111160, with the Fixed Station Program and the Watershed Monitoring Program. The Fixed Station Program sampled Busseron Creek monthly beginning in March of 1999 at site WBU160-0002, located on State Road 58 in Carlisle, Indiana. This site is near the confluence of Busseron Creek with the Wabash River (see Plate 14). Seven of the ten samples at this location were in violation of the surface water quality standards for either sulfate, total dissolved solids (TDS), or both parameters. The Watershed Monitoring Program sampled two locations in the Busseron Creek watershed three separate times. These were site WBU160-0004, located near County Road 500 East in Sullivan County on Busseron Creek (see Plate 5) and site WBU160-0006, located downstream of Sullivan, Indiana, on Buck Creek (see Plate 11). Site WBU160-0004 was in violation of surface water quality standards for sulfate and TDS on all three sampling occasions. Site WBU160-0006 was in violation for ammonia two of the three times it was sampled during 1999.

Examination of the watershed through both onsite visitation and examination of 1:24000 scale maps revealed numerous abandoned/reclaimed strip mines, abandoned shaft mines, and active strip mines. "Acid mine drainage is one of the most common and damaging problems in the aquatic environment. Acid mine water results from the presence of sulfuric acid produced by the oxidation of pyrite, FeS<sub>2</sub>"(Manahan, 1990). "Surface water infiltration or ground water movement causes leaching of sulfide minerals that may pollute groundwater and eventually seep into streams to pollute surface water" (Keller 1993).

The primary goals of the study were to determine the sources and magnitude these sources were contributing to the water quality impairments found in Busseron Creek, identify which waterbodies in the Busseron Creek Watershed were impaired, and the extent of these impairments. The secondary goals of the study were to determine the sources and magnitude these sources were contributing to the ammonia impairments observed in Buck Creek.

## MATERIALS AND METHODS

The area that was studied was the Busseron Creek Watershed, 05120111160, which is mostly located in Sullivan County, with small portions in Greene, Vigo, and Clay Counties (see Plate 1). The Busseron Creek Watershed is an 11 digit hydrologic unit as defined by the United States Geological Survey. This 11 digit hydrologic unit is comprised of smaller watersheds referred to as 14 digit hydrologic units. The Busseron Creek Watershed is 236.3 square miles in size. Approximately 158 square miles are agricultural land, 59 square miles are forest, 8 square miles are urban and residential, and 6 square miles are strip mines (adapted from USGS, 1984). One hundred fifteen sites were initially selected to create a comprehensive evaluation of the water quality in the Busseron Creek Watershed. An additional site was added during sampling when a small unnamed tributary to Buttermilk Creek in 05120111160090 was discovered and

suspected of having a large concentration of sulfate and TDS. These sites are listed in Appendix 1 and depicted on the plates included with this report. Because some streams were very small, they were not included with the Geographic Information Systems (GIS) coverage and are absent from the plates.

The sites were initially to be sampled from October 16 through October 19, 2000. However, on the evening of October 16<sup>th</sup> and the early morning of October 17<sup>th</sup>, the region received approximately 0.8 inches of rain causing stream levels to rise (adapted from Purdue University, 2001). As a result, the project was delayed and sampling resumed on October 24 through October 26, 2000. Both grab samples for laboratory analysis were taken and field measurements were performed at the sites. These chemical parameters and field measurements are listed in Tables 1 and 2, respectively. Flow measurements were taken at the sampling locations when possible, in order for load calculations to be computed. The loads were subsequently calculated in pounds/day. Sampling methods for chemical analytes and field measurements follow the procedures outlined in *Field Procedures Manual, 1998* (Beckman and Hall, 1998). To determine the location and extent of surface water quality violations, the data were evaluated by comparing the water chemistry observations to the surface water quality standards 327 IAC 2-1-6 (IDEM, 1998).

**Table 1 Analytical Water Chemistry Parameters**

Metals			Anions/Physical			Nutrients/Organic		
Parameter	Method	CRQL	Parameter	Method	CRQL	Parameter	Method	CRQL
Arsenic	206.2	4.0 ug/L	Alkalinity	310.1	10 mg/L	TKN	351.2	.05 mg/L
Cadmium	213.2	1.0 ug/L	Total Solids	160.3	1.0 mg/L	Ammonia	350.1	.01 mg/L
Calcium	200.7	40 ug/L	Suspended Solids	160.2	4.0 mg/L	Nitrate + Nitrite	353.2	.01 mg/L
Chromium	218.2	3.0 ug/L	Dissolved Solids	160.1	1.0 mg/L	Total Phosphorus	365.2	1.0 mg/L
Copper	200.7	3.0 ug/L	Sulfate	375.2	1.0 mg/L	TOC	415.1	1.0 mg/L
Lead	239.2	2.0 ug/L	Chloride	325.2	1.0 mg/L	Cyanide, Total	335.3	5 ug/L
Magnesium	200.7	200 ug/L	Hardness	130.1 or SM2340B	1.0 mg/L	Cyanide, Free	SM4500	5 ug/L
Mercury	245.1	0.2 ug/L				COD	410.4	3.0 mg/L
Nickel	249.2	2.0 ug/L						
Selenium	270.2	1.0 ug/L						
Zinc	200.7	10.0 ug/L						

CRQL: Contract Required Quantitation Limit

**Table 2 Field Parameters**

Parameter	Method	Limits of Quantification
Dissolved Oxygen	SM 4500-OG	0.03 mg/L
Turbidity	SM 2130	0.3 NTU
Specific Conductance	SM 2510	3 umhos/cm
Temperature	SM 2550	-5 Celsius
PH	SM 4500-H	+/-0.01

The samples and various types of data collected by this program met different Data Quality Assessment (DQA) levels as cited in the Quality Assurance Project Plan (QAPP) for Indiana Surface Water Quality Programs, Revision 2, June 1999 (IDEM, 1999).

All laboratory data were at DQA Level 3 which was defined as:

**Laboratory Analytical Data:** Analytical results include QC check samples for each batch of samples from which precision, accuracy and completeness can be determined. Detection limits have been determined using 40 CFR Part 136 Appendix B, Revision 1.11. Raw data, chromatograms, spectrograms, and bench sheets are not included as part of the analytical report, but are maintained by the contract laboratory for easy retrieval and review. Data can be elevated from DQA Level 3 to DQA Level 4 by inclusion of this information in the report. In addition, DQA Level 4 QC data must be reported using contract laboratory program (CLP) forms or CLP format. Data falling under this category are considered as complete and are used for regulatory decisions (IDEM, 1999).

All field parameter data were at DQA Level 2 which was defined as:

**Field Analysis Data:** Data are recorded in the field or laboratory on calibrated or standardized equipment. Field duplicates are measured on a regular periodic basis. Calculations may be done in the field or later at the office. Analytical results, which have limited QC checks, are included in this category. Detection limits and ranges have been set for each analysis. The QC checks information for field or laboratory results are usable for estimating the precision, accuracy, and completeness of the project. Data from this category are used independently for rapid assessment and making preliminary decisions (IDEM, 1999).

## RESULTS AND DISCUSSION

### SURFACE WATER QUALITY STANDARDS AND LOADING CALCULATIONS

The data gathered during the study were compared to the surface water quality standards. The violations of the surface water quality standards are listed in Appendix 2 and depicted on Plates 2 through 14 in information boxes for the appropriate sampling locations. These plates present a graphic view of surface water quality violations and how these violations changed as streams progressed through the watershed. Likewise, the loading calculations are listed in Appendix 3 and graphically depicted with the surface water quality violations on Plates 2 through 14. Loading calculations were not always possible because the flow was not measured at some sampling sites.

### ACID MINE DRAINAGE IMPAIRMENTS

The Sulphur Creek Watershed, 05120111160040, was the most severely impaired watershed observed during the study (see Plate 5). Site WBU160-0109, located near the headwaters of Sulphur Creek, did not have any water quality violations. However, the water quality became severely impaired less than 2 miles downstream of this site. Sulphur Creek passes through a former coal mine area locally referred to as the "Alum Cave Mine". At the next downstream location, WBU160-0105, the pH was reduced to only 2.88. Further, the cadmium, copper, nickel, total dissolved solids, and sulfate were all in violation of the surface water quality standards with concentrations of 130 ug/L, 160 ug/L, 910 ug/L, 1400 mg/L, and 350 mg/L, respectively. As Sulphur Creek continued to flow downstream, the concentrations of these metals steadily decreased, and

the water became less acidic. At the final site on Sulphur Creek, WBU160-0090, there were only 3 parameters in violation of the water quality standards. These were sulfate 440 mg/L, cadmium 35 ug/L, and zinc 750 mg/L.

During 1999, site WBU160-0004, downstream of the Sulphur Creek confluence with Busseron Creek, was impaired for sulfate and TDS. Site WBU160-0001, located approximately 1 mile downstream of site WBU160-0004, was the first site sampled for this study on Busseron Creek downstream of Sulphur Creek's confluence (see Plate 5). At this site, Busseron Creek was in violation of the surface water quality standards with a cadmium concentration of 2.5 ug/L. Unexpectedly, it was not in violation for either sulfate or TDS. The rainfall which interrupted the study is the probable cause for Busseron Creek not being impaired for sulfate and TDS immediately downstream of the Sulphur Creek confluence due to dilution.

Two other watersheds had widespread impairments and were large contributors of the sulfate and TDS concentrations observed in Busseron Creek. These watersheds were the Big Branch-Mud Creek Watershed, 05120111160060, and the Buttermilk Creek Watershed, 05120111160090.

The Big Branch-Mud Creek Watershed had sulfate and TDS violations at most of the sampling sites (see Plate 7). Mud Creek was in violation for TDS and sulfate throughout its length. Additionally, site WBU160-0057 on Mud Creek was in violation for cadmium with a concentration of 6 ug/L. Both of the Big Branch sites in this watershed, WBU160-0050 and WBU160-0051, were in violation for sulfate and site WBU160-0050 was also in violation for TDS. Although some of the tributaries to Big Branch in this watershed were in violation for TDS and sulfate, they did not impair Big Branch presumably due to dilution.

The headwaters of the Buttermilk Creek Watershed had frequent violations for both TDS and sulfate (see Plate 10). However, the violations diminished along the length of Buttermilk Creek until only sulfate was in violation at site WBU160-0017, the final site on Buttermilk Creek before it flowed into Busseron Creek.

#### SULFATE AND TOTAL DISSOLVED SOLIDS IN BUSSERON CREEK

The sulfate and TDS concentrations in violation of the surface water quality standards on Busseron Creek were observed initially at site WBU160-0043, located in the Big Branch-Mud Creek Watershed (see Plate 7). Big Branch, with contributions from Mud Creek, had a sufficient load of both TDS and sulfate that impaired Busseron Creek. This impairment was observed until the waters of Busseron Creek flowed to site WBU160-0015 located in the Busseron Creek-Paxton/New Lebanon Watershed (see Plate 12). At this location, only sulfate was in violation. Busseron Creek remained in violation for sulfate throughout the remainder of its reach in the watershed.

## TOTAL DISSOLVED SOLIDS AND SULFATE LOAD

Site WBU160-0002 was the furthest site downstream on Busseron Creek where the flow was measured (See Plate 14). At this location, the TDS load was 420,000 lbs/day and the sulfate load was 220,000 lbs/day. This is the estimate for total output of TDS and sulfate from the Busseron Creek Watershed into the Wabash River. These calculations were compared to the loads from tributary streams to determine the percent these tributary streams were contributing to Busseron Creek's overall output into the Wabash River. The three largest contributing tributary systems of TDS and sulfate were Sulphur Creek, Big Branch-Mud Creek, and Buttermilk Creek.

At Sulphur Creek's furthest downstream location where flow was measured, WBU160-0092, the TDS load was calculated at 11,000 lbs/day and the sulfate load was 7,500 lbs/day. According to these calculations, Sulphur Creek and Sulphur Creek's tributaries contributed about 2.6% to the overall TDS load and 3.4% of the overall sulfate load observed at the final Busseron Creek site.

Big Branch's furthest downstream site was WBU160-0050. At this location, the TDS load was 80,000 lbs/day and the sulfate load was 120,000 lbs/day. Therefore, this tributary system contributed about 19% of the TDS load and 55% of the sulfate load that the Busseron Creek Watershed contributes to the Wabash River.

The furthest downstream site on Buttermilk Creek was WBU160-0017. At this location, the TDS load was 22,000 lbs/day and the sulfate load was 18,000 lbs/day. Therefore, this watershed contributed about 5.2% of the TDS and 8.2% of the sulfate that the Busseron Creek Watershed contributed to the Wabash River.

## AMMONIA

The secondary goals of this study were to determine the sources and magnitude these sources were causing violations for ammonia in Buck Creek observed at site WBU160-0006 during 1999. A large number of ammonia results were rejected due to laboratory failure. Of the samples not rejected, there were no violations for ammonia observed. Presurvey work observed cattle wading in Buck Creek upstream of site WBU160-0006 which may have been the cause of the ammonia violation observed during 1999.

## CONCLUSIONS AND RECOMMENDATIONS

This study determined the extent Busseron Creek was impaired for TDS and sulfate. Additionally, the study determined impaired waterbodies within the Busseron Creek Watershed.

Although Sulphur Creek was severely impaired for TDS and sulfate, the load of these substances was insufficient to impair Busseron Creek, presumably the result of rainfall

diluting the waters of Busseron Creek. Previously undocumented by IDEM, Busseron Creek was impaired for cadmium downstream of the Sulphur Creek confluence. The Sulphur Creek Watershed was severely impaired for heavy metals, sulfate, TDS, and pH. Future remediation efforts should focus in this watershed.

Most sampling locations in the Big Branch-Mud Creek Watershed, 05120111160060, were impaired for TDS and sulfate. The largest percentage of sulfate and TDS loading in the Busseron Creek Watershed was from the Big Branch-Mud Creek Watershed. If the overall sulfate and TDS problems in Busseron Creek are to be managed, work should focus in this watershed.

## SUMMARY

In order to investigate sulfate, TDS, and ammonia stream standard violations observed in 1999, 115 sites were sampled in the Busseron Creek watershed to determine the sources and magnitude these sources were impacting Busseron Creek for sulfate and TDS, and for ammonia in Buck Creek. Analytic samples and field measurements were taken and compared to the surface water quality standards to determine where surface water quality violations occurred. Flow measurements were also taken, when possible, to determine the load of TDS and sulfate a tributary system was contributing to Busseron Creek, and the overall load of sulfate and TDS the Busseron Creek Watershed was contributing to the Wabash River.

Although sampling was originally scheduled for October 16 through October 19, 2000, the area received approximately 0.8 inches of rain during the late hours of October 16<sup>th</sup> and the early hours of October 17<sup>th</sup>, increasing streamflow. As a result, sampling was delayed until the following week.

The most impaired watershed was the Sulphur Creek Watershed, 05120111160040. Although Sulphur Creek was not contributing enough sulfate and TDS to impair Busseron Creek for these two parameters, it had numerous violations for sulfate, TDS, pH and heavy metals. At lower flow conditions, Busseron Creek would probably have violations for sulfate and TDS immediately downstream of the Sulphur Creek confluence.

The Big Branch-Mud Creek Watershed, 05120111160060, was impaired at most sites for both TDS and sulfate. This watershed was also the greatest contributor of TDS and sulfate amounting to about 19% of the TDS and 55% of the sulfate load the Busseron Creek Watershed contributed to the Wabash River.

The Buttermilk Creek Watershed, 05120111160090, was impaired at most sites for either TDS, sulfate, or both. Impairments in Buttermilk Creek diminished in magnitude and frequency as the water flowed further downstream. Overall, the Buttermilk Creek watershed contributed about 5.2% of the TDS and 8.2% of the sulfate load the Busseron Creek Watershed contributed to the Wabash River.

No ammonia violations were observed in either Buck Creek or the rest of the Busseron Creek Watershed. The violations observed in 1999 may have been the result of cattle wading in Buck Creek upstream of the impaired site. Cattle were observed in Buck Creek upstream of this site during the study's presurvey work.

Future remediation efforts should initially focus on two of the watersheds. The Sulphur Creek Watershed is the most impaired for aquatic life. To effectively reduce the sulfate and TDS impairments observed in Busseron Creek, remediation efforts should focus in the Big Branch-Mud Creek Watershed.

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## Appendix A Sampling Locations

Hydrologic Unit	Site	Stream Name	Description	County	Sample Date
05120111160010	WBU160-0097	Busseron Cr	CR 900 N	Sullivan	10/25/2000
05120111160010	WBU160-0101	Busseron Cr	CR 1050 N	Sullivan	10/25/2000
05120111160010	WBU160-0103	Busseron Cr	CR 1100 N	Sullivan	10/24/2000
05120111160010	WBU160-0110	Unnamed Trib of Busseron Cr	CR 500 E	Sullivan	10/24/2000
05120111160010	WBU160-0112	Busseron Cr	Vigo/ Sullivan Co Line Rd	Sullivan	10/24/2000
05120111160010	WBU160-0119	Busseron Cr	SR 246	Vigo	10/24/2000
05120111160010	WBU160-0121	Busseron Cr	CR 50 E - French St	Vigo	10/24/2000
05120111160010	WBU160-0122	Unnamed Trib	CR 44 S, N of CR 50 E (Dickens St)	Vigo	10/24/2000*
05120111160020	WBU160-0082	Unnamed Trib of East Fk	CR 875 N, 1/4 Mile E of CR 575 E	Sullivan	10/16/2000
05120111160020	WBU160-0084	Boston Cr	CR 750 E	Sullivan	10/16/2000
05120111160020	WBU160-0089	Boston Cr	CR 850 E	Sullivan	10/16/2000
05120111160020	WBU160-0091	Hooker Cr	CR 1050 N	Sullivan	10/16/2000
05120111160020	WBU160-0093	Hooker Cr	CR 1100 N	Sullivan	10/16/2000
05120111160020	WBU160-0094	Hooker Cr	Vigo/ Sullivan County Line Rd	Sullivan	10/16/2000
05120111160020	WBU160-0139	East Fk	CR 575 E	Sullivan	10/24/2000
05120111160020	WBU160-0139	East Fk	CR 575 E	Sullivan	10/16/2000
05120111160020	WBU160-0140	East Fk	CR 875 N (West channel)	Sullivan	10/16/2000
05120111160030	WBU160-0123	W Fk Busseron Cr	SR 48	Sullivan	10/24/2000
05120111160030	WBU160-0125	Busseron Cr	SR 48	Sullivan	10/24/2000
05120111160030	WBU160-0126	W Fk Busseron Cr	CR 375 E	Sullivan	10/24/2000
05120111160030	WBU160-0127	Unnamed Trib of Busseron Cr	CR 475 E	Sullivan	10/24/2000**
05120111160030	WBU160-0130	W Fk Busseron Cr	CR 900 N	Sullivan	10/16/2000
05120111160030	WBU160-0131	Unnamed Trib of West Fk	CR 900 N	Sullivan	10/16/2000***
05120111160030	WBU160-0132	W Fk Busseron Cr	CR 950 N	Sullivan	10/16/2000
05120111160030	WBU160-0134	W Fk Busseron Cr	CR1125 N	Sullivan	10/16/2000
05120111160030	WBU160-0135	W Fk Busseron Cr	CR 1150 N	Sullivan	10/16/2000
05120111160030	WBU160-0136	Unnamed Trib of West Fk	CR 1150 N	Sullivan	10/16/2000
05120111160030	WBU160-0137	West Fk	SR 246	Vigo	10/16/2000
05120111160030	WBU160-0145	W Fk Busseron Cr	CR 30 S	Vigo	10/16/2000
05120111160040	WBU160-0001	Busseron Cr	CR 300 N 134-092P	Sullivan	10/25/2000
05120111160040	WBU160-0088	Unnamed Trib of Sulphur Cr	CR 500 E	Sullivan	10/25/2000
05120111160040	WBU160-0090	Sulphur Cr	CR 500 N	Sullivan	10/24/2000
05120111160040	WBU160-0092	Sulphur Cr	CR 600 E	Sullivan	10/24/2000
05120111160040	WBU160-0099	Unnamed Trib of Sulphur Cr	CR 600 N	Sullivan	10/24/2000

Hydrologic Unit	Site	Stream Name	Description	County	Sample Date
05120111160040	WBU160-0100	Sulphur Cr	CR 675 E	Sullivan	10/24/2000
05120111160040	WBU160-0102	Sulphur Cr	CR 600 N	Sullivan	10/24/2000
05120111160040	WBU160-0104	Sulphur Cr	SR 48	Sullivan	10/24/2000
05120111160040	WBU160-0105	Sulphur Cr	CR 750 N	Sullivan	10/24/2000
05120111160040	WBU160-0106	Unnamed Trib of Sulphur Cr	CR 750 N	Sullivan	10/24/2000
05120111160040	WBU160-0109	Sulphur Cr	CR 900 N	Sullivan	10/24/2000
05120111160040	WBU160-0111	Busseron Cr	CR 475 N	Sullivan	10/25/2000
05120111160040	WBU160-0113	Unnamed Trib of Busseron Cr	CR 400 E	Sullivan	10/25/2000
05120111160040	WBU160-0116	Unnamed Trib of Busseron Cr	SR 48	Sullivan	10/25/2000
05120111160050	WBU160-0069	Big Br	CR 825 E	Sullivan	10/24/2000
05120111160050	WBU160-0070	Unnamed Trib of Big Br	CR 825 E, 1 Mile S of Burris Cemetery	Sullivan	10/24/2000
05120111160050	WBU160-0071	Possum Hollow	CR 825 E (near site #3)	Sullivan	10/24/2000
05120111160050	WBU160-0072	Possum Hollow	Sullivan/Green County Line Rd	Sullivan	10/16/2000
05120111160050	WBU160-0073	Unnamed Trib of Possum Hollow	Sullivan/Green Co Line Rd	Sullivan	10/16/2000
05120111160050	WBU160-0074	Possum Hollow	CR 1500 W	Greene	10/16/2000
05120111160050	WBU160-0075	Unnamed Trib	Queen 4 Rd - CR 800 N	Greene	10/16/2000***
05120111160050	WBU160-0076	Unnamed Trib	CR 1500 W	Greene	10/16/2000
05120111160050	WBU160-0079	Big Br	CR 500 N	Sullivan	10/16/2000
05120111160050	WBU160-0081	Unnamed Trib of Big Br	CR 700 E	Sullivan	10/24/2000
05120111160050	WBU160-0144	Unnamed Trib of Big Br	10 Miles E of WBU160-0070, CR 825 E Above Conf with a Small Clear Tributary	Sullivan	10/24/2000
05120111160050	WBU160-0180	Unnamed Trib	CR 825 E, Clear Trib U/S of Conf with Unnamed Trib	Sullivan	10/24/2000
05120111160060	WBU160-0050	Big Br	CR 525 E	Sullivan	10/25/2000
05120111160060	WBU160-0051	Big Br	CR 700 E	Sullivan	10/25/2000
05120111160060	WBU160-0053	Mud Cr	CR 700 E	Sullivan	10/25/2000
05120111160060	WBU160-0055	Mud Cr	CR 100 N Above Conf	Sullivan	10/25/2000
05120111160060	WBU160-0057	Mud Cr	CR 800 E	Sullivan	10/25/2000
05120111160060	WBU160-0058	Unnamed Trib of Mud Cr	Base Line Rd - Center Rd	Sullivan	10/25/2000
05120111160060	WBU160-0061	Mud Cr	CR 500 N	Greene	10/25/2000
05120111160060	WBU160-0062	Unnamed Trib	CR 575 N	Greene	10/24/2000
05120111160060	WBU160-0066	Unnamed Trib of Mud Cr	CR 500 N, 3/4 Mile E of Antioch Cemetery	Greene	10/25/2000
05120111160060	WBU160-0067	Unnamed Trib of Mud Cr	CR 800 E	Sullivan	10/25/2000
05120111160060	WBU160-0159	Unnamed Trib	CR 575 N, 5 Meters Below WBU160-0062.	Greene	10/24/2000

Hydrologic Unit	Site	Stream Name	Description	County	Sample Date
05120111160070	WBU160-0044	Busseron Cr	CR 50 N	Sullivan	10/24/2000
05120111160070	WBU160-0047	Unnamed Trib of Busseron Cr	CR 175 N, S of Reservoir	Sullivan	10/24/2000
05120111160070	WBU160-0083	Kettle Cr	CR 300 N	Sullivan	10/24/2000
05120111160070	WBU160-0155	Kettle Cr	SR 48	Sullivan	10/24/2000
05120111160070	WBU160-0156	Kettle Cr	CR 650 N	Sullivan	10/24/2000
05120111160070	WBU160-0157	Kettle Cr	CR 275 E	Sullivan	10/24/2000
05120111160070	WBU160-0158	Unnamed Trib of Kettle Cr	CR 650 N	Sullivan	10/24/2000
05120111160080	WBU160-0043	Busseron Cr	SR 54	Sullivan	10/25/2000
05120111160080	WBU160-0045	Morrison Cr	CR 50 N	Sullivan	10/25/2000
05120111160080	WBU160-0150	Morrison Cr	SR 41	Sullivan	10/25/2000
05120111160080	WBU160-0151	Morrison Cr	CR 575 N	Sullivan	10/25/2000
05120111160080	WBU160-0154	Unnamed Trib of Morrison Cr	CR 350 N	Sullivan	10/25/2000
05120111160090	WBU160-0017	Buttermilk Cr	CR 200 E	Sullivan	10/26/2000
05120111160090	WBU160-0018	Buttermilk Cr	CR 275 E	Sullivan	10/26/2000
05120111160090	WBU160-0020	Buttermilk Cr	CR 450 E	Sullivan	10/26/2000
05120111160090	WBU160-0021	Buttermilk Cr	CR 600 E	Sullivan	10/26/2000
05120111160090	WBU160-0022	Unnamed Trib of Buttermilk Cr	CR 600 E	Sullivan	10/26/2000
05120111160090	WBU160-0023	Unnamed Trib of Buttermilk Cr	SR 54	Sullivan	10/25/2000
05120111160090	WBU160-0024	Unnamed Trib of Buttermilk Cr	SR 54, SE of CR 50 S	Sullivan	10/25/2000
05120111160090	WBU160-0181	Unnamed Trib of Buttermilk Cr	SR54, Approximately 0.2 Miles W of Intersection with CR 50 S	Sullivan	10/25/2000
05120111160100	WBU160-0016	Robbins Br	CR 250 E	Sullivan	10/26/2000
05120111160100	WBU160-0028	Buck Cr	CR 200 S	Sullivan	10/26/2000
05120111160100	WBU160-0029	Buck Cr	SR 54	Sullivan	10/26/2000
05120111160100	WBU160-0030	Unnamed Trib of Buck Cr	US 41, S of Silver St	Sullivan	10/26/2000
05120111160100	WBU160-0031	Unnamed Trib of Buck Cr	SR 54	Sullivan	10/26/2000
05120111160100	WBU160-0033	Buck Cr	Silver St	Sullivan	10/26/2000
05120111160100	WBU160-0034	Buck Cr	Washington St	Sullivan	10/26/00**
05120111160100	WBU160-0035	Unnamed Trib of Buck Cr	CR 125 W	Sullivan	10/26/2000
05120111160100	WBU160-0037	Buck Cr	Wolfe Rd	Sullivan	10/26/2000
05120111160100	WBU160-0038	Buck Cr	US 41	Sullivan	10/26/2000
05120111160100	WBU160-0039	Buck Cr	CR 300 N	Sullivan	10/25/00**
05120111160100	WBU160-0161	Unnamed Trib of Buck Cr	CR 75 W	Sullivan	10/26/2000
05120111160100	WBU160-0179	Unnamed Trib of Buck Cr	Washington St, CR 200 W Intersection	Sullivan	10/26/2000**

Hydrologic Unit	Site	Stream Name	Description	County	Sample Date
05120111160110	WBU160-0011	Busseron Cr	CR 600 S	Sullivan	10/25/2000
05120111160110	WBU160-0012	Busseron Cr	CR 500 S	Sullivan	10/25/2000
05120111160110	WBU160-0015	Busseron Cr	US 41	Sullivan	10/25/2000
05120111160110	WBU160-0146	Unnamed Trib of Busseron Cr	CR 300 S, W of CR 150 W	Sullivan	10/25/2000
05120111160110	WBU160-0147	Unnamed Trib of Busseron Cr	CR 300 S, E of CR 150 W	Sullivan	10/25/2000
05120111160110	WBU160-0148	Unnamed Trib of Busseron Cr	SR 54, W of CR 200 W	Sullivan	10/25/2000
05120111160110	WBU160-0149	Unnamed Trib of Busseron Cr	SR 54, E of CR 150 W	Sullivan	10/25/2000
05120111160120	WBU160-0010	Bear Run	CR 100 E	Sullivan	10/25/2000
05120111160120	WBU160-0040	Middle Fork Cr	CR 100 E - Old US 41	Sullivan	10/25/2000
05120111160120	WBU160-0041	Middle Fork Cr	CR 400 E	Sullivan	10/25/2000
05120111160120	WBU160-0042	Middle Fork Cr	CR 500 E	Sullivan	10/25/2000
05120111160120	WBU160-0163	Middle Fork Cr	CR 600 E	Sullivan	10/25/2000
05120111160120	WBU160-0164	Unnamed Trib of Middle Fork Cr	CR 500 S	Sullivan	10/25/2000
05120111160120	WBU160-0169	Middle Fork Cr	CR 325 E	Sullivan	10/25/2000
05120111160120	WBU160-0170	Unnamed Trib of Middle Fork Cr	CR 325 E	Sullivan	10/25/2000
05120111160120	WBU160-0173	Unnamed Trib of Middle Fork Cr	CR 650 S	Sullivan	10/25/2000***
05120111160130	WBU160-0002	Busseron Cr	At SR 58, Carlisle	Sullivan	10/25/2000
05120111160130	WBU160-0007	Busseron Cr	CR 400 W	Sullivan	10/25/2000
05120111160130	WBU160-0008	Busseron Cr	CR 200 W, 18 SW	Sullivan	10/25/2000

\*Site not sampled due to road construction.

\*\*Site not sampled, professional judgement.

\*\*\*Site not sampled, stream flow too low.

## Appendix B Surface Water Quality Violations

<b>Hydrologic Unit</b>	<b>Site</b>	<b>Waterbody</b>	<b>Date</b>	<b>Parameter</b>	<b>Level</b>
05120111160010	WBU160-0121	Busseron Creek	10/24/00	Dissolved Oxygen	3.9 mg/L
05120111160020	WBU160-0082	Unnamed Trib, East Fork	10/16/00	Lead	4.6 ug/L
05120111160020	WBU160-0084	Boston Creek	10/16/00	Dissolved Oxygen*	4.83 mg/L
05120111160040	WBU160-0001	Busseron Creek	10/25/00	Cadmium	2.5 ug/L
05120111160040	WBU160-0088	Unnamed Trib, Sulphur Creek	10/25/00	Sulfate	410 mg/L
05120111160040	WBU160-0090	Sulphur Creek	10/24/00	Cadmium	35 ug/L
05120111160040	WBU160-0090	Sulphur Creek	10/24/00	Sulfate	440 mg/L
05120111160040	WBU160-0090	Sulphur Creek	10/24/00	Zinc	750 ug/L
05120111160040	WBU160-0092	Sulphur Creek	10/24/00	pH	5.01
05120111160040	WBU160-0092	Sulphur Creek	10/24/00	Cadmium	54 ug/L
05120111160040	WBU160-0092	Sulphur Creek	10/24/00	Copper	49 ug/L
05120111160040	WBU160-0092	Sulphur Creek	10/24/00	Sulfate	520 mg/L
05120111160040	WBU160-0092	Sulphur Creek	10/24/00	Zinc	1100 ug/L
05120111160040	WBU160-0099	Unnamed Trib, Sulphur Creek	10/24/00	Dissolved Oxygen	2.98 mg/L
05120111160040	WBU160-0100	Sulphur Creek	10/24/00	pH	4.43
05120111160040	WBU160-0100	Sulphur Creek	10/24/00	Cadmium	63 ug/L
05120111160040	WBU160-0100	Sulphur Creek	10/24/00	Copper	68 ug/L
05120111160040	WBU160-0100	Sulphur Creek	10/24/00	TDS	840 mg/L
05120111160040	WBU160-0100	Sulphur Creek	10/24/00	Sulfate	590 mg/L
05120111160040	WBU160-0100	Sulphur Creek	10/24/00	Zinc	1400 ug/L
05120111160040	WBU160-0102	Sulphur Creek	10/24/00	pH	3.38
05120111160040	WBU160-0102	Sulphur Creek	10/24/00	Cadmium	86 ug/L
05120111160040	WBU160-0102	Sulphur Creek	10/24/00	Copper	99 ug/L
05120111160040	WBU160-0102	Sulphur Creek	10/24/00	Nickel	650 ug/L
05120111160040	WBU160-0102	Sulphur Creek	10/24/00	TDS	1100 mg/L
05120111160040	WBU160-0102	Sulphur Creek	10/24/00	Sulfate	950 mg/L
05120111160040	WBU160-0102	Sulphur Creek	10/24/00	Zinc	1900 ug/L
05120111160040	WBU160-0104	Sulphur Creek	10/24/00	pH	3.11
05120111160040	WBU160-0104	Sulphur Creek	10/24/00	Cadmium	110 ug/L
05120111160040	WBU160-0104	Sulphur Creek	10/24/00	Copper	130 ug/L
05120111160040	WBU160-0104	Sulphur Creek	10/24/00	Nickel	760 ug/L
05120111160040	WBU160-0104	Sulphur Creek	10/24/00	TDS	1300 mg/L
05120111160040	WBU160-0104	Sulphur Creek	10/24/00	Sulfate	890 mg/L
05120111160040	WBU160-0104	Sulphur Creek	10/24/00	Zinc	2200 ug/L
05120111160040	WBU160-0105	Sulphur Creek	10/24/00	pH	2.88
05120111160040	WBU160-0105	Sulphur Creek	10/24/00	Cadmium	130 ug/L
05120111160040	WBU160-0105	Sulphur Creek	10/24/00	Copper	160 ug/L
05120111160040	WBU160-0105	Sulphur Creek	10/24/00	Nickel	910 ug/L
05120111160040	WBU160-0105	Sulphur Creek	10/24/00	TDS	1400 mg/L
05120111160040	WBU160-0105	Sulphur Creek	10/24/00	Sulfate	350 mg/L
05120111160040	WBU160-0106	Unnamed Trib, Sulphur Creek	10/24/00	Dissolved Oxygen*	4.95 mg/L
05120111160040	WBU160-0113	Unnamed Trib, Busseron Creek	10/25/00	Dissolved Oxygen	3.38 mg/L
05120111160040	WBU160-0116	Unnamed Trib, Busseron Creek	10/25/00	Dissolved Oxygen*	4.92 mg/L
05120111160050	WBU160-0070	Unnamed Trib, Big Branch	10/24/00	TDS	1800 mg/L

<b>Hydrologic Unit</b>	<b>Site</b>	<b>Waterbody</b>	<b>Date</b>	<b>Parameter</b>	<b>Level</b>
05120111160050	WBU160-0070	Unnamed Trib, Big Branch	10/24/00	Sulfate	1200 mg/L
05120111160050	WBU160-0073	Unnamed Trib, Possum Hollow	10/16/00	Sulfate	270 mg/L
05120111160050	WBU160-0076	Unnamed	10/16/00	Dissolved Oxygen*	4.71 mg/L
05120111160050	WBU160-0081	Unnamed Trib, Big Branch	10/24/00	Sulfate	360 mg/L
05120111160050	WBU160-0144	Unnamed Trib, Big Branch	10/24/00	TDS	1700 mg/L
05120111160050	WBU160-0144	Unnamed Trib, Big Branch	10/24/00	Sulfate	1100 mg/L
05120111160050	WBU160-0180	Unnamed Trib, Big Branch	10/24/00	TDS	1600 mg/L
05120111160050	WBU160-0180	Unnamed Trib, Big Branch	10/24/00	Sulfate	500 mg/L
05120111160060	WBU160-0050	Big Branch	10/25/00	TDS	920 mg/L
05120111160060	WBU160-0050	Big Branch	10/25/00	Sulfate	1400 mg/L
05120111160060	WBU160-0051	Big Branch	10/25/00	Sulfate	1200 mg/L
05120111160060	WBU160-0053	Mud Creek	10/25/00	TDS	1500 mg/L
05120111160060	WBU160-0053	Mud Creek	10/25/00	Sulfate	920 mg/L
05120111160060	WBU160-0055	Mud Creek	10/25/00	TDS	1700 mg/L
05120111160060	WBU160-0055	Mud Creek	10/25/00	Sulfate	1000 mg/L
05120111160060	WBU160-0057	Mud Creek	10/25/00	Cadmium	6 ug/L
05120111160060	WBU160-0057	Mud Creek	10/25/00	TDS	1700 mg/L
05120111160060	WBU160-0057	Mud Creek	10/25/00	Sulfate	1100 mg/L
05120111160060	WBU160-0058	Unnamed Trib, Mud Creek	10/25/00	TDS	1400 mg/L
05120111160060	WBU160-0058	Unnamed Trib, Mud Creek	10/25/00	Sulfate	840 mg/L
05120111160060	WBU160-0061	Mud Creek	10/25/00	Sulfate	330 mg/L
05120111160060	WBU160-0062	Unnamed	10/24/00	Sulfate	350 mg/L
05120111160060	WBU160-0066	Unnamed Trib, Mud Creek	10/25/00	TDS	790 mg/L
05120111160060	WBU160-0066	Unnamed Trib, Mud Creek	10/25/00	Sulfate	470 mg/L
05120111160060	WBU160-0067	Unnamed Trib, Mud Creek	10/25/00	TDS	1500 mg/L
05120111160060	WBU160-0067	Unnamed Trib, Mud Creek	10/25/00	Sulfate	1000 mg/L
05120111160060	WBU160-0159	Unnamed	10/24/00	Sulfate	400 mg/L
05120111160070	WBU160-0044	Busseron Creek	10/24/00	TDS	820 mg/L
05120111160070	WBU160-0044	Busseron Creek	10/24/00	Sulfate	450 mg/L
05120111160070	WBU160-0083	Kettle Creek	10/24/00	Dissolved Oxygen	3.9 mg/L
05120111160080	WBU160-0043	Busseron Creek	10/25/00	Dissolved Oxygen*	4.57 mg/L
05120111160080	WBU160-0043	Busseron Creek	10/25/00	TDS	1300 mg/L
05120111160080	WBU160-0043	Busseron Creek	10/25/00	Sulfate	730 mg/L
05120111160090	WBU160-0017	Buttermilk Creek	10/26/00	Sulfate	480 mg/L
05120111160090	WBU160-0020	Buttermilk Creek	10/26/00	TDS	1200 mg/L
05120111160090	WBU160-0021	Buttermilk Creek	10/26/00	TDS	1500 mg/L
05120111160090	WBU160-0021	Buttermilk Creek	10/26/00	Sulfate	1200 mg/L
05120111160090	WBU160-0022	Unnamed Trib, Buttermilk Creek	10/26/00	Sulfate	1100 mg/L

<b>Hydrologic Unit</b>	<b>Site</b>	<b>Waterbody</b>	<b>Date</b>	<b>Parameter</b>	<b>Level</b>
05120111160090	WBU160-0024	Unnamed Trib, Buttermilk Creek	10/25/00	TDS	1200 mg/L
05120111160090	WBU160-0024	Unnamed Trib, Buttermilk Creek	10/25/00	Sulfate	1000 mg/L
05120111160090	WBU160-0181	Unnamed Trib, Buttermilk Creek	10/25/00	Dissolved Oxygen*	4.85 mg/L
05120111160090	WBU160-0181	Unnamed Trib, Buttermilk Creek	10/25/00	TDS	3700 mg/L
05120111160090	WBU160-0181	Unnamed Trib, Buttermilk Creek	10/25/00	Sulfate	490 mg/L
05120111160100	WBU160-0016	Robbins Branch	10/26/00	Dissolved Oxygen*	4.43 mg/L
05120111160100	WBU160-0035	Unnamed Trib, Buck Creek	10/26/00	Dissolved Oxygen*	4.18 mg/L
05120111160100	WBU160-0161	Unnamed Trib, Buck Creek	10/26/00	Dissolved Oxygen*	4.1 mg/L
05120111160110	WBU160-0011	Busseron Creek	10/25/00	Sulfate	360 mg/L
05120111160110	WBU160-0012	Busseron Creek	10/25/00	Sulfate	360 mg/L
05120111160110	WBU160-0015	Busseron Creek	10/25/00	Sulfate	390 mg/L
05120111160130	WBU160-0002	Busseron Creek	10/25/00	Sulfate	320 mg/L
05120111160130	WBU160-0007	Busseron Creek	10/25/00	Sulfate	280 mg/L
05120111160130	WBU160-0008	Busseron Creek	10/25/00	Sulfate	320 mg/L

\*Dissolved Oxygen was less than 5.0 mg/L but was higher than 4.0 mg/L.

## Appendix C Sulfate and Total Dissolved Solids Loading Calculations

14-Digit HUC	Site Name	Stream Name	Sample Date	TDS Load (lbs/day)	SO4 Load (lbs/day)
05120111160010	WBU160-0097	Busseron Cr	10/25/2000	2800	390
05120111160010	WBU160-0101	Busseron Cr	10/25/2000	1800	250
05120111160010	WBU160-0103	Busseron Cr	10/24/2000	3300	510
05120111160010	WBU160-0110	Unnamed Trib of Busseron Cr	10/24/2000	1600	350
05120111160010	WBU160-0112	Busseron Cr	10/24/2000	1100	91
05120111160010	WBU160-0119	Busseron Cr	10/24/2000	840	79
05120111160010	WBU160-0121	Busseron Cr	10/24/2000	83	14
05120111160020	WBU160-0093	Hooker Cr	10/16/2000	320	37
05120111160020	WBU160-0094	Hooker Cr	10/16/2000	1000	140
05120111160020	WBU160-0139	East Fk	10/16/2000	5500	880
05120111160020	WBU160-0139	East Fk	10/24/2000	1500	340
05120111160030	WBU160-0123	W Fk Busseron Cr	10/24/2000	4500	1200
05120111160030	WBU160-0125	Busseron Cr	10/24/2000	6900	1400
05120111160030	WBU160-0126	W Fk Busseron Cr	10/24/2000	2200	370
05120111160030	WBU160-0130	W Fk Busseron Cr	10/16/2000	6100	1700
05120111160030	WBU160-0132	W Fk Busseron Cr	10/16/2000	1200	210
05120111160030	WBU160-0134	W Fk Busseron Cr	10/16/2000	450	90
05120111160030	WBU160-0135	W Fk Busseron Cr	10/16/2000	280	47
05120111160030	WBU160-0136	Unnamed Trib of West Fk	10/16/2000	98	29
05120111160030	WBU160-0145	W Fk Busseron Cr	10/16/2000	160	25
05120111160040	WBU160-0088	Unnamed Trib of Sulphur Cr	10/25/2000	1300	720
05120111160040	WBU160-0092	Sulphur Cr	10/24/2000	11000	7500
05120111160040	WBU160-0100	Sulphur Cr	10/24/2000	11000	7500
05120111160040	WBU160-0102	Sulphur Cr	10/24/2000	10000	9000
05120111160040	WBU160-0104	Sulphur Cr	10/24/2000	11000	7200
05120111160040	WBU160-0105	Sulphur Cr	10/24/2000	13000	3200

14-Digit HUC	Site Name	Stream Name	Sample Date	TDS Load (lbs/day)	SO4 Load (lbs/day)
05120111160050	WBU160-0069	Big Br	10/24/2000	2900	310
05120111160050	WBU160-0070	Unnamed Trib of Big Br	10/24/2000	2100	1400
05120111160050	WBU160-0071	Possum Hollow	10/24/2000	4300	2100
05120111160050	WBU160-0072	Possum Hollow	10/16/2000	1400	470
05120111160050	WBU160-0073	Unnamed Trib of Possum Hollow	10/16/2000	1800	930
05120111160050	WBU160-0074	Possum Hollow	10/16/2000	970	330
05120111160050	WBU160-0076	Unnamed Trib	10/16/2000	250	72
05120111160050	WBU160-0079	Big Br	10/16/2000	4300	350
05120111160050	WBU160-0081	Unnamed Trib of Big Br	10/24/2000	530	260
05120111160050	WBU160-0144	Unnamed Trib of Big Br	10/24/2000	3300	2100
05120111160050	WBU160-0180	Unnamed Trib	10/24/2000	880	270
05120111160060	WBU160-0050	Big Br	10/25/2000	80000	120000
05120111160060	WBU160-0051	Big Br	10/25/2000	17000	42000
05120111160060	WBU160-0053	Mud Cr	10/25/2000	56000	34000
05120111160060	WBU160-0055	Mud Cr	10/25/2000	48000	28000
05120111160060	WBU160-0057	Mud Cr	10/25/2000	22000	14000
05120111160060	WBU160-0058	Unnamed Trib of Mud Cr	10/25/2000	9600	5700
05120111160060	WBU160-0061	Mud Cr	10/25/2000	1900	1000
05120111160060	WBU160-0062	Unnamed Trib	10/24/2000	1400	750
05120111160060	WBU160-0066	Unnamed Trib of Mud Cr	10/25/2000	550	330
05120111160060	WBU160-0067	Unnamed Trib of Mud Cr	10/25/2000	18000	12000
05120111160060	WBU160-0159	Unnamed Trib	10/24/2000	1500	850
05120111160070	WBU160-0044	Busseron Cr	10/24/2000	450000	250000
05120111160070	WBU160-0047	Unnamed Trib of Busseron Cr	10/24/2000	250	55
05120111160070	WBU160-0155	Kettle Cr	10/24/2000	280	47
05120111160070	WBU160-0156	Kettle Cr	10/24/2000	650	120
05120111160070	WBU160-0157	Kettle Cr	10/24/2000	1100	240
05120111160070	WBU160-0158	Unnamed Trib of Kettle Cr	10/24/2000	180	53

14-Digit HUC	Site Name	Stream Name	Sample Date	TDS Load (lbs/day)	SO4 Load (lbs/day)
05120111160080	WBU160-0045	Morrison Cr	10/25/2000	3100	500
05120111160080	WBU160-0150	Morrison Cr	10/25/2000	400	110
05120111160080	WBU160-0154	Unnamed Trib of Morrison Cr	10/25/2000	500	340
05120111160090	WBU160-0017	Buttermilk Cr	10/26/2000	22000	18000
05120111160090	WBU160-0018	Buttermilk Cr	10/26/2000	20000	8300
05120111160090	WBU160-0020	Buttermilk Cr	10/26/2000	20000	2100
05120111160090	WBU160-0021	Buttermilk Cr	10/26/2000	5600	4500
05120111160090	WBU160-0022	Unnamed Trib of Buttermilk Cr	10/26/2000	1700	4400
05120111160090	WBU160-0023	Unnamed Trib of Buttermilk Cr	10/25/2000	550	220
05120111160090	WBU160-0024	Unnamed Trib of Buttermilk Cr	10/25/2000	1900	1600
05120111160100	WBU160-0028	Buck Cr	10/26/2000	7600	730
05120111160100	WBU160-0029	Buck Cr	10/26/2000	2000	240
05120111160100	WBU160-0030	Unnamed Trib of Buck Cr	10/26/2000	740	89
05120111160100	WBU160-0031	Unnamed Trib of Buck Cr	10/26/2000	3400	150
05120111160100	WBU160-0033	Buck Cr	10/26/2000	590	56
05120111160100	WBU160-0035	Unnamed Trib of Buck Cr	10/26/2000	550	48
05120111160100	WBU160-0037	Buck Cr	10/26/2000	530	39
05120111160100	WBU160-0038	Buck Cr	10/26/2000	160	18
05120111160110	WBU160-0147	Unnamed Trib of Busseron Cr	10/25/2000	1200	150
05120111160120	WBU160-0010	Bear Run	10/25/2000	1900	250
05120111160120	WBU160-0040	Middle Fork Cr	10/25/2000	5700	1200
05120111160120	WBU160-0041	Middle Fork Cr	10/25/2000	1800	600
05120111160120	WBU160-0042	Middle Fork Cr	10/25/2000	760	290
05120111160120	WBU160-0163	Middle Fork Cr	10/25/2000	110	29
05120111160120	WBU160-0164	Unnamed Trib of Middle Fork Cr	10/25/2000	580	140
05120111160120	WBU160-0169	Middle Fork Cr	10/25/2000	2800	740

14-Digit HUC	Site Name	Stream Name	SampleDate	TDS Load (lbs/day)	SO4 Load (lbs/day)
05120111160120	WBU160-0170	Unnamed Trib of Middle Fork Cr	10/25/2000	1200	210
05120111160130	WBU160-0002	Busseron Cr	10/25/2000	420000	220000

## Appendix D Field Data

14-Digit HUC	Site Name	Stream Name	Sample Date	Sample Number	Flow (CFS)	Dissolved Oxygen (mg/L)	pH	Water Temp. (°C)	Specific Conductivity (usem/cm)	Turbidity (NTU)	Percent Dissolved Oxygen Saturation
05120111160010	WBU160-0097	Busseron Cr	10/25/2000	AA02673	3.285	9.2	7.44	15.8	275	9.7	94.1
05120111160010	WBU160-0101	Busseron Cr	10/25/2000	AA02675	2.285	8.75	7.33	15.7	250	10.2	88.9
05120111160010	WBU160-0103	Busseron Cr	10/24/2000	AA02676	4.316	8.66	7.65	19.39	222	14.5	95.3
05120111160010	WBU160-0110	Unnamed Trib of Busseron Cr	10/24/2000	AA02677	1.971	8.65	7.9	19.29	257	19.9	95.1
05120111160010	WBU160-0112	Busseron Cr	10/24/2000	AA02678	1.541	8.25	7.33	19.97	175	12.4	92.2
05120111160010	WBU160-0119	Busseron Cr	10/24/2000	AA02680	1.55	9.47	7.87	19.55	144	34.1	105
05120111160010	WBU160-0121	Busseron Cr	10/24/2000	AA02681	0.057	3.9	7.12	17.02	460	1.5	
05120111160020	WBU160-0082	Unnamed Trib of East Fk	10/16/2000	AA02647		7.96	7.1	17.29	261	14	84.3
05120111160020	WBU160-0084	Boston Cr	10/16/2000	AA02649		4.83	7	16.16	303	12	50.2
05120111160020	WBU160-0089	Boston Cr	10/16/2000	AA02650		7.58	7.27	15.73	434	8	78.4
05120111160020	WBU160-0091	Hooker Cr	10/16/2000	AA02651		7.42	7.5	15.21	597	13	75.6
05120111160020	WBU160-0093	Hooker Cr	10/16/2000	AA02652	0.16	7.97	7.48	15.03	635	0.6	81.1
05120111160020	WBU160-0094	Hooker Cr	10/16/2000	AA02653	0.485	7.1	7.15	15.15	659	3	73.2
05120111160020	WBU160-0139	East Fk	10/16/2000	AA02654	6.79	8.92	7.02	16.24	217	23	92.7
05120111160020	WBU160-0139	East Fk	10/24/2000	AA02902	1.173	7.81	7.26	19.87	409		87.3
05120111160020	WBU160-0140	East Fk	10/16/2000	AA02656		9.56	7.24	16.54	195	40	99.8
05120111160030	WBU160-0123	W Fk Busseron Cr	10/24/2000	AA02683	2.203	7.37	7.32	18.87	624	2.8	81.4
05120111160030	WBU160-0125	Busseron Cr	10/24/2000	AA02684	5.594	8.05	7.51	18.7	351	8.4	
05120111160030	WBU160-0126	W Fk Busseron Cr	10/24/2000	AA02685	1.397	7.48	7.5	18.66	489	5.6	
05120111160030	WBU160-0130	W Fk Busseron Cr	10/16/2000	AA02687	4.739	9.2	7.75	16.25	384	38.9	96
05120111160030	WBU160-0132	W Fk Busseron Cr	10/16/2000	AA02689	0.699	8.71	7.52	15.67	511	8.4	90.2
05120111160030	WBU160-0134	W Fk Busseron Cr	10/16/2000	AA02691	0.308	8.63	7.45	15.84	452	10.7	89.4
05120111160030	WBU160-0135	W Fk Busseron Cr	10/16/2000	AA02692	0.184	9.46	7.5	15.32	450	3.4	97.3
05120111160030	WBU160-0136	Unnamed Trib of West Fk	10/16/2000	AA02693	0.076	9.36	7.5	16.1	368	30.4	98
05120111160030	WBU160-0137	West Fk	10/16/2000	AA02694		9.11	7.86	16.48	399	2.4	96.1
05120111160030	WBU160-0145	W Fk Busseron Cr	10/16/2000	AA02695	0.1	5.09	6.89	16.02	466	4.5	53.2
05120111160040	WBU160-0001	Busseron Cr	10/25/2000	AA02657		8.89	7.32	17.75	619		94
05120111160040	WBU160-0088	Unnamed Trib of Sulphur Cr	10/25/2000	AA02658	0.327	5.07	7.06	15.43	1024		51.7
05120111160040	WBU160-0090	Sulphur Cr	10/24/2000	AA02659		6.14	6.07	18.71	906		67.2
05120111160040	WBU160-0092	Sulphur Cr	10/24/2000	AA02660	2.67	7.97	5.01	18.09	1018		86.1
05120111160040	WBU160-0099	Unnamed Trib of Sulphur Cr	10/24/2000	AA02661		2.98	6.44	18.36	507		32.3
05120111160040	WBU160-0100	Sulphur Cr	10/24/2000	AA02662	2.36	7.49	4.43	18.7	1127		82.2
05120111160040	WBU160-0102	Sulphur Cr	10/24/2000	AA02663	1.76	7.51	3.38	18.68	1438		82.7
05120111160040	WBU160-0104	Sulphur Cr	10/24/2000	AA02664	1.51	8.9	3.11	18.84	1640		97.2
05120111160040	WBU160-0105	Sulphur Cr	10/24/2000	AA02666	1.7	8.46	2.88	17.63	1900		91.5

14-Digit HUC	Site Name	Stream Name	Sample Date	Sample Number	Flow (CFS)	Dissolved Oxygen (mg/L)	pH	Water Temp. (°C)	Specific Conductivity (usem/cm)	Turbidity (NTU)	Percent Dissolved Oxygen Saturation
05120111160040	WBU160-0106	Unnamed Trib of Sulphur Cr	10/24/2000	AA02667		4.95	6.92	18.48	445		53.8
05120111160040	WBU160-0109	Sulphur Cr	10/24/2000	AA02668		7.36	7.23	18.5	652		80
05120111160040	WBU160-0111	Busseron Cr	10/25/2000	AA02669		7.52	7.2	16.24	477		77.4
05120111160040	WBU160-0113	Unnamed Trib of Busseron Cr	10/25/2000	AA02670		3.38	6.63	15.92	260		34.6
05120111160040	WBU160-0116	Unnamed Trib of Busseron Cr	10/25/2000	AA02671		4.92	6.65	16.1	590		50.4
05120111160050	WBU160-0069	Big Br	10/24/2000	AA02621	4.136	8.76	7.72	17.51	224		
05120111160050	WBU160-0070	Unnamed Trib of Big Br	10/24/2000	AA02623	0.22	7.98	7.13	18.68	1920		
05120111160050	WBU160-0071	Possum Hollow	10/24/2000	AA02624	1.9595	9.52	7.77	18.25	636		
05120111160050	WBU160-0072	Possum Hollow	10/16/2000	AA02625	0.95	8.92	7.71	14.88	445		
05120111160050	WBU160-0073	Unnamed Trib of Possum Hollow	10/16/2000	AA02626	0.64	8.75	7.46	16.5	693		31.8
05120111160050	WBU160-0074	Possum Hollow	10/16/2000	AA02627	0.78	8.8	7.39	13.9	343		14.2
05120111160050	WBU160-0076	Unnamed Trib	10/16/2000	AA02629	0.16	8	7.34	14.19	333		58.8
05120111160050	WBU160-0076	Unnamed Trib	10/16/2000	AA02629	0.16	4.71	7.06	14.87	440		18.2
05120111160050	WBU160-0079	Big Br	10/16/2000	AA02631	5.36	9.31	7.64	16.89	206		16.7
05120111160050	WBU160-0081	Unnamed Trib of Big Br	10/24/2000	AA02632	0.134	7.25	7.9	21.06	1007		
05120111160050	WBU160-0144	Unnamed Trib of Big Br	10/24/2000	AA02633	0.36	7.31	6.9	18.93	1930		
05120111160050	WBU160-0180	Unnamed Trib	10/24/2000	AA02747	0.102	8.54	7.68	18.32	1870		
05120111160060	WBU160-0050	Big Br	10/25/2000	AA02634	16.061	7.01	6.82	17.99	1212		
05120111160060	WBU160-0051	Big Br	10/25/2000	AA02635	6.469	7.65	7.59	18.17	655		
05120111160060	WBU160-0053	Mud Cr	10/25/2000	AA02636	6.937	7.45	6.75	18.45	1700		
05120111160060	WBU160-0055	Mud Cr	10/25/2000	AA02637	5.244	7.76	6.58	18	1840		
05120111160060	WBU160-0057	Mud Cr	10/25/2000	AA02638	2.41	7.76	6.1	17.27	1890		
05120111160060	WBU160-0058	Unnamed Trib of Mud Cr	10/25/2000	AA02639	1.266	7.33	7.13	16.16	1730		
05120111160060	WBU160-0061	Mud Cr	10/25/2000	AA02640	0.5835	6.07	7.39	15.49	833		
05120111160060	WBU160-0062	Unnamed Trib	10/24/2000	AA02642	0.395	6.39	7.59	19.79	910		
05120111160060	WBU160-0066	Unnamed Trib of Mud Cr	10/25/2000	AA02643	0.13	8.66	7.99	17.1	1075		
05120111160060	WBU160-0067	Unnamed Trib of Mud Cr	10/25/2000	AA02644	2.172	7.13	7.29	17.08	1810		
05120111160060	WBU160-0159	Unnamed Trib	10/24/2000	AA02645	0.395	6.53	7.23	19.7	971		
05120111160070	WBU160-0044	Busseron Cr	10/24/2000	AA02696	102	7.9	7.37	18.3	1071		24
05120111160070	WBU160-0047	Unnamed Trib of Busseron Cr	10/24/2000	AA02697	0.465	7.15	7.4	21.1	164		27
05120111160070	WBU160-0083	Kettle Cr	10/24/2000	AA02698	0	3.9	6.99	19.6	474		14.2
05120111160070	WBU160-0155	Kettle Cr	10/24/2000	AA02699	0.148	6.5	7.35	18.8	616		10
05120111160070	WBU160-0156	Kettle Cr	10/24/2000	AA02700	0.3435	7.8	7.4	19.7	603		11.7
05120111160070	WBU160-0157	Kettle Cr	10/24/2000	AA02701	1.478	9.3	7.7	20.3	222		23.6
05120111160070	WBU160-0158	Unnamed Trib of Kettle Cr	10/24/2000	AA02702	0.09	8	7.43	21.3	542		9.2

14-Digit HUC	Site Name	Stream Name	Sample Date	Sample Number	Flow (CFS)	Dissolved Oxygen (mg/L)	pH	Water Temp. (°C)	Specific Conductivity (usem/cm)	Turbidity (NTU)	Percent Dissolved Oxygen Saturation
05120111160080	WBU160-0043	Busseron Cr	10/25/2000	AA02703		4.57	7.15	17.4	1420	19.5	
05120111160080	WBU160-0045	Morrison Cr	10/25/2000	AA02704	5.783	8.25	7.1	17.7	160	14	
05120111160080	WBU160-0150	Morrison Cr	10/25/2000	AA02705	0.188	5.3	7.3	16.2	596	28	
05120111160080	WBU160-0151	Morrison Cr	10/25/2000	AA02706	0	6.5	7.4	15.2	541	23	
05120111160080	WBU160-0154	Unnamed Trib of Morrison Cr	10/25/2000	AA02707	0.332	7.85	6.2	17.4	410	19	
05120111160090	WBU160-0017	Buttermilk Cr	10/26/2000	AA02916	7.03	8.85	8.08	20.07	841		
05120111160090	WBU160-0018	Buttermilk Cr	10/26/2000	AA02918	6.139	9.75	8.41	19.95	861		
05120111160090	WBU160-0020	Buttermilk Cr	10/26/2000	AA02919	3.0365	7.47	7	17.95	1500		
05120111160090	WBU160-0021	Buttermilk Cr	10/26/2000	AA02920	0.6955	7.23	7.48	16.87	1890		
05120111160090	WBU160-0022	Unnamed Trib of Buttermilk Cr	10/26/2000	AA02921	0.749	7.87	7.84	18.07	626		
05120111160090	WBU160-0023	Unnamed Trib of Buttermilk Cr	10/25/2000	AA02922	0.2	7.4	7.92	20.06	747		
05120111160090	WBU160-0024	Unnamed Trib of Buttermilk Cr	10/25/2000	AA02924	0.3	6.42	7.32	18.77	1464		
05120111160090	WBU160-0181	Unnamed Trib of Buttermilk Cr	10/25/2000	AA02748		4.85	6.75	14.8	3400		
05120111160100	WBU160-0016	Robbins Br	10/26/2000	AA02716		4.43	7.19	18.45	340		47.9
05120111160100	WBU160-0016	Robbins Br	10/26/2000	AA02716							
05120111160100	WBU160-0028	Buck Cr	10/26/2000	AA02715	4.7	7.65	6.97	18.6	529		
05120111160100	WBU160-0029	Buck Cr	10/26/2000	AA02717	1.83	5.3	7.31	17.36	370		
05120111160100	WBU160-0030	Unnamed Trib of Buck Cr	10/26/2000	AA02718	0.57	6.96	7.35	16.36	441		72.2
05120111160100	WBU160-0031	Unnamed Trib of Buck Cr	10/26/2000	AA02719	2.106	7.72	7.49	19.63	689		85.9
05120111160100	WBU160-0033	Buck Cr	10/26/2000	AA02720	0.612	6.72	7.15	17.74	282	9.4	71.4
05120111160100	WBU160-0035	Unnamed Trib of Buck Cr	10/26/2000	AA02722	0.423	4.18	7.1	17.16	424	2.8	44
05120111160100	WBU160-0037	Buck Cr	10/26/2000	AA02723	0.61	5.91	7.19	18	260	15.5	63
05120111160100	WBU160-0038	Buck Cr	10/26/2000	AA02724	0.111	5.18	7.11	16.98	487	17.2	54.2
05120111160100	WBU160-0161	Unnamed Trib of Buck Cr	10/26/2000	AA02726		4.1	6.84	17.06	449		43
05120111160110	WBU160-0011	Busseron Cr	10/25/2000	AA02904		7.32	7.26	18.46	977		78.9
05120111160110	WBU160-0012	Busseron Cr	10/25/2000	AA02905		7.11	7.27	18.36	982		77.1
05120111160110	WBU160-0015	Busseron Cr	10/25/2000	AA02906		7.29	7.25	19.42	1023		82.9
05120111160110	WBU160-0146	Unnamed Trib of Busseron Cr	10/25/2000	AA02907		6.92	7.07	17.53	604	74	
05120111160110	WBU160-0147	Unnamed Trib of Busseron Cr	10/25/2000	AA02908	0.734	9.24	7.35	18.39	572		100
05120111160110	WBU160-0148	Unnamed Trib of Busseron Cr	10/25/2000	AA02909		9.12	7.43	17.83	697		98.2
05120111160110	WBU160-0149	Unnamed Trib of Busseron Cr	10/25/2000	AA02910		11.06	7.43	17.9	579		118.5
05120111160120	WBU160-0010	Bear Run	10/25/2000	AA02925	1.07	8.2	7.4	18	600	3.6	88.9
05120111160120	WBU160-0040	Middle Fork Cr	10/25/2000	AA02927	4.38	8.03	7.44	19.77	403	3.8	89.1
05120111160120	WBU160-0041	Middle Fork Cr	10/25/2000	AA02928	1.782	7.36	7.14	18.64	333	14.7	80.2
05120111160120	WBU160-0042	Middle Fork Cr	10/25/2000	AA02929	0.742	7.47	7.38	19.13	319	32.4	82
05120111160120	WBU160-0163	Middle Fork Cr	10/25/2000	AA02930	0.089	8.46	7.24	17.34	395	10.6	90.2

14-Digit HUC	Site Name	Stream Name	Sample Date	Sample Number	Flow (CFS)	Dissolved Oxygen (mg/L)	pH	Water Temp. (°C)	Specific Conductivity (usem/cm)	Turbidity (NTU)	Percent Dissolved Oxygen Saturation
05120111160120	WBU160-0164	Unnamed Trib of Middle Fork Cr	10/25/2000	AA02932	0.6	9.48	8.12	20.33	302	18.2	106.3
05120111160120	WBU160-0169	Middle Fork Cr	10/25/2000	AA02933	2.342	7.96	7.34	18.75	355	5.8	87.5
05120111160120	WBU160-0170	Unnamed Trib of Middle Fork Cr	10/25/2000	AA02934	0.872	7.71	7.27	7.02	432	3.4	81.5
05120111160130	WBU160-0002	Busseron Cr	10/25/2000	AA02911	128	7.41	7.36	19.06	897		81.3
05120111160130	WBU160-0007	Busseron Cr	10/25/2000	AA02912		7.85	7.44	18.61	887		85.8
05120111160130	WBU160-0008	Busseron Cr	10/25/2000	AA02913		7.26	7.41	18.56	915		84.3

Note: Blank cells indicate that flow measurements were not possible or the hydrolab was not equipped to measure turbidity or percent saturation.

## Appendix E Metals and Hardness Laboratory Data

14-Digit HUC	Site Name	Sample Date	Sample Number	Arsenic	Cadmium	Chromium, Total	Copper	Hardness (as CaCO <sub>3</sub> )	Hardness (as CaCO <sub>3</sub> ) Calculated	Lead (Total)	Mercury	Nickel	Selenium	Zinc (Total)
5120111160010	WBU160-0097	10/25/2000	AA02673	<4 ug/L	<1 ug/L (J)	<3 ug/L	<3 ug/L		116 mg/L (QJ)	<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160010	WBU160-0101	10/25/2000	AA02675	<4 ug/L	<1 ug/L (J)	<3 ug/L	<3 ug/L		103 mg/L (QJ)	<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160010	WBU160-0103	10/24/2000	AA02676	<4 ug/L	<1 ug/L (J)	<3 ug/L	<3 ug/L		90 mg/L (QJ)	<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160010	WBU160-0110	10/24/2000	AA02677	<4 ug/L	<1 ug/L (J)	<3 ug/L	<3 ug/L		113 mg/L (QJ)	<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	13 ug/L
5120111160010	WBU160-0112	10/24/2000	AA02678	<4 ug/L	<1 ug/L (J)	<3 ug/L	<3 ug/L	50 mg/L		<2 ug/L	<0.2 ug/L	2.3 ug/L	<3 ug/L	<10 ug/L
5120111160010	WBU160-0119	10/24/2000	AA02680	<4 ug/L	<1 ug/L (J)	<3 ug/L	<3 ug/L	38 mg/L		<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160010	WBU160-0121	10/24/2000	AA02681	<4 ug/L	<1 ug/L (J)	<3 ug/L	<3 ug/L		175 mg/L (QJ)	<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160020	WBU160-0082	10/16/2000	AA02647	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L		99 mg/L (QJ)	4.6 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	11 ug/L
5120111160020	WBU160-0084	10/16/2000	AA02649	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L	190 mg/L		<2 ug/L	<0.2 ug/L	2.3 ug/L	<3 ug/L	<10 ug/L
5120111160020	WBU160-0089	10/16/2000	AA02650	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L		205 mg/L (QJ)	2.1 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160020	WBU160-0091	10/16/2000	AA02651	<4 ug/L	<1 ug/L	<3 ug/L	6.9 ug/L		313 mg/L (QJ)	<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	12 ug/L
5120111160020	WBU160-0093	10/16/2000	AA02652	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L	400 mg/L		<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160020	WBU160-0094	10/16/2000	AA02653	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L		304 mg/L (QJ)	<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160020	WBU160-0139	10/16/2000	AA02654	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L		92 mg/L (QJ)	<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160020	WBU160-0139	10/24/2000	AA02902	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L (J)		160 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L (J)	<10 ug/L
5120111160020	WBU160-0140	10/16/2000	AA02656	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L		84 mg/L (QJ)	<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160030	WBU160-0123	10/24/2000	AA02683	<4 ug/L	<1 ug/L (J)	<3 ug/L	<3 ug/L		251 mg/L (QJ)	<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160030	WBU160-0125	10/24/2000	AA02684	<4 ug/L	<1 ug/L (J)	<3 ug/L	<3 ug/L		144 mg/L (QJ)	<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160030	WBU160-0126	10/24/2000	AA02685	<4 ug/L	<1 ug/L (J)	<3 ug/L	<3 ug/L	160 mg/L		<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160030	WBU160-0130	10/16/2000	AA02687	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L		164 mg/L (QJ)	<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160030	WBU160-0132	10/16/2000	AA02689	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L		207 mg/L (QJ)	<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160030	WBU160-0134	10/16/2000	AA02691	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L		200 mg/L (QJ)	<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160030	WBU160-0135	10/16/2000	AA02692	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L	130 mg/L		<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160030	WBU160-0136	10/16/2000	AA02693	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L		149 mg/L (QJ)	<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	10 ug/L
5120111160030	WBU160-0137	10/16/2000	AA02694	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L		158 mg/L (QJ)	<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160030	WBU160-0145	10/16/2000	AA02695	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L	260 mg/L		<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160040	WBU160-0001	10/25/2000	AA02657	<4 ug/L	2.5 ug/L	<3 ug/L	3 ug/L	170 mg/L		<2 ug/L (J)	<0.2 ug/L	26 ug/L	<3 ug/L (J)	49 ug/L
5120111160040	WBU160-0088	10/25/2000	AA02658	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L	360 mg/L		<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L (J)	<10 ug/L
5120111160040	WBU160-0090	10/24/2000	AA02659	<4 ug/L	35 ug/L	<3 ug/L	18 ug/L		429 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	290 ug/L	<3 ug/L (J)	750 ug/L
5120111160040	WBU160-0092	10/24/2000	AA02660	<4 ug/L	54 ug/L	<3 ug/L	49 ug/L	340 mg/L		<2 ug/L (J)	<0.2 ug/L	420 ug/L	<3 ug/L (J)	1100 ug/L
5120111160040	WBU160-0099	10/24/2000	AA02661	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L		187 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	12 ug/L	<3 ug/L (J)	<10 ug/L
5120111160040	WBU160-0100	10/24/2000	AA02662	<4 ug/L	63 ug/L	<3 ug/L	68 ug/L	420 mg/L		<2 ug/L (J)	<0.2 ug/L	480 ug/L	<3 ug/L (J)	1400 ug/L

14-Digit HUC	Site Name	Sample Date	Sample Number	Arsenic	Cadmium	Chromium, Total	Copper	Hardness (as CaCO <sub>3</sub> )	Hardness (as CaCO <sub>3</sub> ) Calculated	Lead (Total)	Mercury	Nickel	Selenium	Zinc (Total)
5120111160040	WBU160-0102	10/24/2000	AA02663	<4 ug/L	86 ug/L	7.5 ug/L	99 ug/L	420 mg/L		<2 ug/L (J)	<0.2 ug/L	650 ug/L	<3 ug/L (J)	1900 ug/L
5120111160040	WBU160-0104	10/24/2000	AA02664	<4 ug/L	110 ug/L	14 ug/L	130 ug/L	470 mg/L (DJ)		<2 ug/L (J)	<0.2 ug/L	760 ug/L	<3 ug/L (J)	2200 ug/L
5120111160040	WBU160-0105	10/24/2000	AA02666	<4 ug/L	130 ug/L	18 ug/L	160 ug/L	620 mg/L		<2 ug/L (J)	<0.2 ug/L	910 ug/L	<3 ug/L (J)	290 ug/L
5120111160040	WBU160-0106	10/24/2000	AA02667	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L		187 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L (J)	<10 ug/L
5120111160040	WBU160-0109	10/24/2000	AA02668	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L (J)		256 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L (J)	<10 ug/L
5120111160040	WBU160-0111	10/25/2000	AA02669	<4 ug/L	<1 ug/L	<3 ug/L	7.9 ug/L (J)		195 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	3 ug/L	<3 ug/L (J)	20 ug/L
5120111160040	WBU160-0113	10/25/2000	AA02670	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L (J)	63 mg/L		<2 ug/L (J)	<0.2 ug/L	17 ug/L	<3 ug/L (J)	<10 ug/L
5120111160040	WBU160-0116	10/25/2000	AA02671	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L (J)		194 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L (J)	<10 ug/L
5120111160050	WBU160-0069	10/24/2000	AA02621	<4 ug/L (J)	<1 ug/L	<3 ug/L	<3 ug/L	70 mg/L		<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L (J)	<10 ug/L
5120111160050	WBU160-0070	10/24/2000	AA02623	<4 ug/L (J)	<1 ug/L	<3 ug/L	<3 ug/L	760 mg/L		<2 ug/L (J)	<0.2 ug/L	8.9 ug/L	<3 ug/L (J)	24 ug/L
5120111160050	WBU160-0071	10/24/2000	AA02624	<4 ug/L (J)	<1 ug/L	<3 ug/L	<3 ug/L	210 mg/L		<2 ug/L (J)	<0.2 ug/L	2.4 ug/L	<3 ug/L (J)	<10 ug/L
5120111160050	WBU160-0072	10/16/2000	AA02625	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L		169 mg/L (QJ)	4.4 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160050	WBU160-0073	10/16/2000	AA02626	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L		357 mg/L (QJ)	5.9 ug/L	<0.2 ug/L	3.4 ug/L	<3 ug/L	<10 ug/L
5120111160050	WBU160-0074	10/16/2000	AA02627	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L		133 mg/L (QJ)	<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160050	WBU160-0076	10/16/2000	AA02629	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L		205 mg/L (QJ)	<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160050	WBU160-0079	10/16/2000	AA02631	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L		82 mg/L (QJ)	<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160050	WBU160-0081	10/24/2000	AA02632	<4 ug/L (J)	<1 ug/L	<3 ug/L	<3 ug/L		532 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L (J)	<10 ug/L
5120111160050	WBU160-0144	10/24/2000	AA02633	<4 ug/L (J)	<1 ug/L	<3 ug/L	<3 ug/L	690 mg/L		<2 ug/L (J)	<0.2 ug/L	11 ug/L	<3 ug/L (J)	39 ug/L
5120111160050	WBU160-0180	10/24/2000	AA02747	<4 ug/L (J)	<1 ug/L	<3 ug/L	<3 ug/L	1200 mg/L		<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L (J)	<10 ug/L
5120111160060	WBU160-0050	10/25/2000	AA02634	<4 ug/L (J)	<1 ug/L	<3 ug/L	<3 ug/L	490 mg/L		<2 ug/L (J)	<0.2 ug/L	14 ug/L	<3 ug/L (J)	76 ug/L
5120111160060	WBU160-0051	10/25/2000	AA02635	<4 ug/L (J)	<1 ug/L	<3 ug/L	<3 ug/L		306 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L (J)	<10 ug/L
5120111160060	WBU160-0053	10/25/2000	AA02636	<4 ug/L (J)	2.7 ug/L	<3 ug/L	<3 ug/L	660 mg/L		<2 ug/L (J)	<0.2 ug/L	31 ug/L	<3 ug/L (J)	180 ug/L
5120111160060	WBU160-0055	10/25/2000	AA02637	<4 ug/L (J)	4 ug/L	<3 ug/L	3.7 ug/L	690 mg/L		<2 ug/L (J)	<0.2 ug/L	41 ug/L	<3 ug/L (J)	290 ug/L
5120111160060	WBU160-0057	10/25/2000	AA02638	<4 ug/L (J)	6 ug/L	<3 ug/L	4.9 ug/L	700 mg/L		<2 ug/L (J)	<0.2 ug/L	53 ug/L	<3 ug/L (J)	470 ug/L
5120111160060	WBU160-0058	10/25/2000	AA02639	<4 ug/L (J)	<1 ug/L	<3 ug/L	<3 ug/L	1100 mg/L		<2 ug/L (J)	<0.2 ug/L	17 ug/L	<3 ug/L (J)	13 ug/L
5120111160060	WBU160-0061	10/25/2000	AA02640	<4 ug/L (J)	<1 ug/L	<3 ug/L	<3 ug/L	570 mg/L		<2 ug/L (J)	<0.2 ug/L	3.4 ug/L	<3 ug/L (J)	<10 ug/L
5120111160060	WBU160-0062	10/24/2000	AA02642	<4 ug/L (J)	<1 ug/L	<3 ug/L	<3 ug/L		460 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L (J)	<10 ug/L
5120111160060	WBU160-0066	10/25/2000	AA02643	<4 ug/L (J)	<1 ug/L	<3 ug/L	<3 ug/L		528 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L (J)	<10 ug/L
5120111160060	WBU160-0067	10/25/2000	AA02644	<4 ug/L (J)	<1 ug/L	<3 ug/L	<3 ug/L			<2 ug/L (J)	<0.2 ug/L	16 ug/L	<3 ug/L (J)	12 ug/L
5120111160060	WBU160-0159	10/24/2000	AA02645	<4 ug/L (J)	<1 ug/L	<3 ug/L	<3 ug/L		470 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L (J)	<10 ug/L
5120111160070	WBU160-0044	10/24/2000	AA02696	<4 ug/L	1.4 ug/L	<3 ug/L (J)	<3 ug/L	280 mg/L		<2 ug/L (J)	<0.2 ug/L	15 ug/L	<3 ug/L	31 ug/L
5120111160070	WBU160-0047	10/24/2000	AA02697	<4 ug/L	<1 ug/L	<3 ug/L (J)	<3 ug/L	41 mg/L		<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L	12 ug/L
5120111160070	WBU160-0083	10/24/2000	AA02698	<4 ug/L	<1 ug/L	<3 ug/L (J)	<3 ug/L		205 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	4.8 ug/L	<3 ug/L	17 ug/L

14-Digit HUC	Site Name	Sample Date	Sample Number	Arsenic	Cadmium	Chromium, Total	Copper	Hardness (as CaCO <sub>3</sub> )	Hardness (as CaCO <sub>3</sub> ) Calculated	Lead (Total)	Mercury	Nickel	Selenium	Zinc (Total)
5120111160070	WBU160-0155	10/24/2000	AA02699	<4 ug/L	<1 ug/L	<3 ug/L (J)	<3 ug/L	140 mg/L		<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160070	WBU160-0156	10/24/2000	AA02700	<4 ug/L	<1 ug/L	<3 ug/L (J)	<3 ug/L		200 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160070	WBU160-0157	10/24/2000	AA02701	<4 ug/L	<1 ug/L	<3 ug/L (J)	<3 ug/L	55 mg/L		<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160070	WBU160-0158	10/24/2000	AA02702	<4 ug/L	<1 ug/L	<3 ug/L (J)	7.1 ug/L		232 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L	14 ug/L
5120111160080	WBU160-0043	10/25/2000	AA02703	<4 ug/L	<1 ug/L	<3 ug/L (J)	<3 ug/L	400 mg/L		2.7 ug/L (J)	<0.2 ug/L	2.1 ug/L	<3 ug/L	<10 ug/L
5120111160080	WBU160-0045	10/25/2000	AA02704	<4 ug/L	<1 ug/L	<3 ug/L (J)	<3 ug/L	44 mg/L		<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160080	WBU160-0150	10/25/2000	AA02705	<4 ug/L	<1 ug/L	<3 ug/L (J)	<3 ug/L		226 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160080	WBU160-0151	10/25/2000	AA02706	<4 ug/L	<1 ug/L	<3 ug/L (J)	<3 ug/L		212 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160080	WBU160-0154	10/25/2000	AA02707	<4 ug/L	<1 ug/L	<3 ug/L (J)	<3 ug/L		157 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	2.6 ug/L	<3 ug/L	<10 ug/L
5120111160090	WBU160-0017	10/26/2000	AA02916	<4 ug/L (J)	<1 ug/L	<3 ug/L	<3 ug/L	420 mg/L		<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L (J)	<10 ug/L
5120111160090	WBU160-0018	10/26/2000	AA02918	<4 ug/L (J)	<1 ug/L	<3 ug/L	<3 ug/L		317 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L (J)	<10 ug/L
5120111160090	WBU160-0020	10/26/2000	AA02919	<4 ug/L (J)	<1 ug/L	<3 ug/L	<3 ug/L		696 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	10 ug/L	<3 ug/L (J)	25 ug/L
5120111160090	WBU160-0021	10/26/2000	AA02920	<4 ug/L (J)	<1 ug/L	<3 ug/L	<3 ug/L	300 mg/L		<2 ug/L (J)	<0.2 ug/L	2.7 ug/L	<3 ug/L (J)	<10 ug/L
5120111160090	WBU160-0022	10/26/2000	AA02921	<4 ug/L (J)	<1 ug/L	<3 ug/L	<3 ug/L		294 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L (J)	<10 ug/L
5120111160090	WBU160-0023	10/25/2000	AA02922	<4 ug/L (J)	<1 ug/L	<3 ug/L	<3 ug/L		248 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L (J)	15 ug/L
5120111160090	WBU160-0024	10/25/2000	AA02924	<4 ug/L (J)	<1 ug/L	<3 ug/L	<3 ug/L		857 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	2.5 ug/L	<3 ug/L (J)	<10 ug/L
5120111160090	WBU160-0181	10/25/2000	AA02748	<4 ug/L (J)	<1 ug/L	<3 ug/L	<3 ug/L	2600 mg/L		<2 ug/L (J)	<0.2 ug/L	9.3 ug/L	<3 ug/L (J)	<10 ug/L
5120111160100	WBU160-0016	10/26/2000	AA02716	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L		113 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L (J)	<10 ug/L
5120111160100	WBU160-0028	10/26/2000	AA02715	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L		198 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L (J)	<10 ug/L
5120111160100	WBU160-0029	10/26/2000	AA02717	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L	100 mg/L		<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L (J)	<10 ug/L
5120111160100	WBU160-0030	10/26/2000	AA02718	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L		168 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L (J)	<10 ug/L
5120111160100	WBU160-0031	10/26/2000	AA02719	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L		227 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L (J)	<10 ug/L
5120111160100	WBU160-0033	10/26/2000	AA02720	<4 ug/L	<1 ug/L (J)	<3 ug/L	<3 ug/L		105 mg/L (QJ)	<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160100	WBU160-0035	10/26/2000	AA02722	<4 ug/L	<1 ug/L (J)	<3 ug/L	<3 ug/L		176 mg/L (QJ)	<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160100	WBU160-0037	10/26/2000	AA02723	<4 ug/L	<1 ug/L (J)	<3 ug/L	<3 ug/L		93 mg/L (QJ)	<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160100	WBU160-0038	10/26/2000	AA02724	<4 ug/L	<1 ug/L (J)	<3 ug/L	<3 ug/L	100 mg/L		<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160100	WBU160-0161	10/26/2000	AA02726	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L		177 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L (J)	<10 ug/L
5120111160110	WBU160-0011	10/25/2000	AA02904	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L (J)		388 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	5.9 ug/L	<3 ug/L (J)	<10 ug/L
5120111160110	WBU160-0012	10/25/2000	AA02905	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L		398 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	5.9 ug/L	<3 ug/L (J)	<10 ug/L
5120111160110	WBU160-0015	10/25/2000	AA02906	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L	130 mg/L		<2 ug/L (J)	<0.2 ug/L	7.3 ug/L	<3 ug/L (J)	<10 ug/L
5120111160110	WBU160-0146	10/25/2000	AA02907	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L		248 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L (J)	<10 ug/L
5120111160110	WBU160-0147	10/25/2000	AA02908	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L		228 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L (J)	<10 ug/L

14-Digit HUC	Site Name	Sample Date	Sample Number	Arsenic	Cadmium	Chromium, Total	Copper	Hardness (as CaCO <sub>3</sub> )	Hardness (as CaCO <sub>3</sub> ) Calculated	Lead (Total)	Mercury	Nickel	Selenium	Zinc (Total)
5120111160110	WBU160-0148	10/25/2000	AA02909	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L		264 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L (J)	16 ug/L
5120111160110	WBU160-0149	10/25/2000	AA02910	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L		223 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	<2 ug/L	<3 ug/L (J)	<10 ug/L
5120111160120	WBU160-0010	10/25/2000	AA02925	<4 ug/L	<1 ug/L (J)	<3 ug/L	<3 ug/L		264 mg/L (QJ)	<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160120	WBU160-0040	10/25/2000	AA02927	<4 ug/L	<1 ug/L (J)	<3 ug/L	<3 ug/L		147 mg/L (QJ)	<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160120	WBU160-0041	10/25/2000	AA02928	<4 ug/L	<1 ug/L (J)	<3 ug/L	<3 ug/L	58 mg/L		<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160120	WBU160-0042	10/25/2000	AA02929	<4 ug/L	<1 ug/L (J)	<3 ug/L	<3 ug/L	68 mg/L		<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160120	WBU160-0163	10/25/2000	AA02930	<4 ug/L	<1 ug/L (J)	<3 ug/L	<3 ug/L		165 mg/L (QJ)	<2 ug/L	<0.2 ug/L	<2 ug/L	3.4 ug/L	<10 ug/L
5120111160120	WBU160-0164	10/25/2000	AA02932	<4 ug/L	<1 ug/L (J)	<3 ug/L	<3 ug/L	63 mg/L		<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160120	WBU160-0169	10/25/2000	AA02933	<4 ug/L	<1 ug/L (J)	<3 ug/L	<3 ug/L	56 mg/L		<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	<10 ug/L
5120111160120	WBU160-0170	10/25/2000	AA02934	<4 ug/L	<1 ug/L (J)	<3 ug/L	<3 ug/L		165 mg/L (QJ)	<2 ug/L	<0.2 ug/L	<2 ug/L	<3 ug/L	14 ug/L
5120111160130	WBU160-0002	10/25/2000	AA02911	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L		371 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	4.1 ug/L	<3 ug/L (J)	<10 ug/L
5120111160130	WBU160-0007	10/25/2000	AA02912	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L		359 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	4.3 ug/L	<3 ug/L (J)	<10 ug/L
5120111160130	WBU160-0008	10/25/2000	AA02913	<4 ug/L	<1 ug/L	<3 ug/L	<3 ug/L		378 mg/L (QJ)	<2 ug/L (J)	<0.2 ug/L	4.3 ug/L	<3 ug/L (J)	<10 ug/L

Note: Calculated hardness was used in lieu of colorimetric method 130.1 due to laboratory QA/QC failure. Other blank cells indicate rejected data.

Data Flags: Estimated (J), one or more QC checks or criteria was out of control (J), the parameter was found in the lab or field blank (B), the relative percent difference for this parameter was above the acceptable control limits (D), analysis performed outside of holding time (H).

## Appendix F General Chemistry and Cyanide Laboratory Data

14-Digit HUC	Site Name	Sample Date	Sample Number	Alkalinity	Chemical Oxygen Demand	Chloride	Cyanide (Total)	Phosphorus, Total	Total Dissolved Solids	Total Suspended Solids	Total Solids	Sulfate
5120111160010	WBU160-0097	10/25/2000	AA02673	80 mg/L	14 mg/L	8.2 mg/L	<0.005 mg/L	0.08 mg/L	160 mg/L	7 mg/L	170 mg/L	22 mg/L
5120111160010	WBU160-0101	10/25/2000	AA02675	80 mg/L	11 mg/L	7.9 mg/L	<0.005 mg/L	0.13 mg/L	150 mg/L	9 mg/L	160 mg/L	20 mg/L
5120111160010	WBU160-0103	10/24/2000	AA02676	60 mg/L	18 mg/L	6.5 mg/L	<0.005 mg/L	0.16 mg/L	140 mg/L	11 mg/L	140 mg/L	22 mg/L
5120111160010	WBU160-0110	10/24/2000	AA02677	80 mg/L	15 mg/L	3.5 mg/L	<0.005 mg/L	0.071 mg/L	150 mg/L	20 mg/L	140 mg/L	33 mg/L
5120111160010	WBU160-0112	10/24/2000	AA02678	70 mg/L (DJ)	22 mg/L	9.3 mg/L	<0.005 mg/L	0.24 mg/L	130 mg/L	8 mg/L	120 mg/L	11 mg/L
5120111160010	WBU160-0119	10/24/2000	AA02680	40 mg/L	26 mg/L	9.1 mg/L	<0.005 mg/L	0.29 mg/L	100 mg/L	10 mg/L	110 mg/L	9.4 mg/L
5120111160010	WBU160-0121	10/24/2000	AA02681	140 mg/L	19 mg/L	21 mg/L	<0.005 mg/L	0.14 mg/L	270 mg/L	<4 mg/L	260 mg/L	47 mg/L
5120111160020	WBU160-0082	10/16/2000	AA02647	90 mg/L	13 mg/L	14 mg/L	<0.005 mg/L (B)	0.17 mg/L	160 mg/L	11 mg/L	170 mg/L	17 mg/L
5120111160020	WBU160-0084	10/16/2000	AA02649	90 mg/L	28 mg/L	4.8 mg/L	<0.005 mg/L (B)	0.19 mg/L	210 mg/L	13 mg/L	230 mg/L	54 mg/L
5120111160020	WBU160-0089	10/16/2000	AA02650	190 mg/L	15 mg/L	9.4 mg/L		0.085 mg/L	260 mg/L	<4 mg/L	280 mg/L	23 mg/L
5120111160020	WBU160-0091	10/16/2000	AA02651	300 mg/L	<5 mg/L	11 mg/L	<0.005 mg/L (B)	0.08 mg/L	380 mg/L	<4 mg/L	400 mg/L	40 mg/L
5120111160020	WBU160-0093	10/16/2000	AA02652	280 mg/L	11 mg/L	12 mg/L		0.068 mg/L	370 mg/L	<4 mg/L	380 mg/L	43 mg/L
5120111160020	WBU160-0094	10/16/2000	AA02653	260 mg/L	11 mg/L	26 mg/L	<0.005 mg/L (B)	0.088 mg/L	390 mg/L	7 mg/L	530 mg/L	54 mg/L
5120111160020	WBU160-0139	10/16/2000	AA02654	80 mg/L	22 mg/L	5.4 mg/L	<0.005 mg/L (B)	0.099 mg/L	150 mg/L	12 mg/L	170 mg/L	24 mg/L
5120111160020	WBU160-0139	10/24/2000	AA02902	120 mg/L	20 mg/L (J)	8.4 mg/L (HJ)	<0.005 mg/L	0.06 mg/L	240 mg/L	<4 mg/L	220 mg/L	54 mg/L
5120111160020	WBU160-0140	10/16/2000	AA02656	80 mg/L	30 mg/L	5.1 mg/L	<0.005 mg/L (B)	0.15 mg/L	140 mg/L	11 mg/L	170 mg/L	21 mg/L
5120111160030	WBU160-0123	10/24/2000	AA02683	180 mg/L	<5 mg/L	19 mg/L	<0.005 mg/L	0.068 mg/L	380 mg/L	4 mg/L	350 mg/L	100 mg/L
5120111160030	WBU160-0125	10/24/2000	AA02684	100 mg/L	13 mg/L	9.6 mg/L	<0.005 mg/L	0.099 mg/L	230 mg/L	7 mg/L	200 mg/L	47 mg/L
5120111160030	WBU160-0126	10/24/2000	AA02685	150 mg/L	5.3 mg/L	20 mg/L	<0.005 mg/L	0.091 mg/L	290 mg/L	<4 mg/L	290 mg/L	49 mg/L
5120111160030	WBU160-0130	10/16/2000	AA02687	130 mg/L		7.4 mg/L	<0.005 mg/L (B)	0.15 mg/L	240 mg/L	39 mg/L	310 mg/L	67 mg/L
5120111160030	WBU160-0132	10/16/2000	AA02689			21 mg/L	<0.005 mg/L (B)	0.3 mg/L	320 mg/L	11 mg/L	330 mg/L	56 mg/L
5120111160030	WBU160-0134	10/16/2000	AA02691	160 mg/L		9.7 mg/L	0.084 mg/L (BJ)	0.06 mg/L	270 mg/L	11 mg/L	300 mg/L	54 mg/L
5120111160030	WBU160-0135	10/16/2000	AA02692	170 mg/L		13 mg/L	<0.005 mg/L (B)	0.068 mg/L	280 mg/L	4 mg/L	280 mg/L	47 mg/L
5120111160030	WBU160-0136	10/16/2000	AA02693	110 mg/L		4.6 mg/L	<0.005 mg/L (B)	0.097 mg/L	240 mg/L	22 mg/L	250 mg/L	71 mg/L
5120111160030	WBU160-0137	10/16/2000	AA02694	120 mg/L		6.8 mg/L		0.041 mg/L	250 mg/L	8 mg/L	270 mg/L	74 mg/L
5120111160030	WBU160-0145	10/16/2000	AA02695	170 mg/L	<5 mg/L (B)	12 mg/L	<0.005 mg/L (B)	0.1 mg/L	290 mg/L	9 mg/L	310 mg/L	46 mg/L
5120111160040	WBU160-0001	10/25/2000	AA02657	<10 mg/L	14 mg/L	9.4 mg/L	<0.005 mg/L (HJB)	0.08 mg/L	390 mg/L	23 mg/L	380 mg/L	180 mg/L
5120111160040	WBU160-0088	10/25/2000	AA02658	150 mg/L	7.2 mg/L	3.7 mg/L		<0.03 mg/L	740 mg/L	4 mg/L	790 mg/L	410 mg/L
5120111160040	WBU160-0090	10/24/2000	AA02659	20 mg/L	<5 mg/L	8.6 mg/L	<0.005 mg/L	0.051 mg/L	680 mg/L	8 mg/L	660 mg/L	440 mg/L
5120111160040	WBU160-0092	10/24/2000	AA02660	<10 mg/L	<5 mg/L	8.8 mg/L	<0.005 mg/L	<0.03 mg/L	740 mg/L	6 mg/L	770 mg/L	520 mg/L
5120111160040	WBU160-0099	10/24/2000	AA02661	80 mg/L	<5 mg/L	17 mg/L	<0.005 mg/L	0.07 mg/L	330 mg/L	<4 mg/L	310 mg/L	140 mg/L
5120111160040	WBU160-0100	10/24/2000	AA02662	<10 mg/L	<5 mg/L	9.3 mg/L (HJ)	<0.005 mg/L	<0.03 mg/L	840 mg/L	24 mg/L	940 mg/L	590 mg/L

14-Digit HUC	Site Name	Sample Date	Sample Number	Alkalinity	Chemical Oxygen Demand	Chloride	Cyanide (Total)	Phosphorus, Total	Total Dissolved Solids	Total Suspended Solids	Total Solids	Sulfate
5120111160040	WBU160-0102	10/24/2000	AA02663	<10 mg/L	<5 mg/L	9.6 mg/L (HJ)	<0.005 mg/L	0.038 mg/L	1100 mg/L	10 mg/L	1200 mg/L	950 mg/L
5120111160040	WBU160-0104	10/24/2000	AA02664	<10 mg/L	<5 mg/L	10 mg/L (HJ)	<0.005 mg/L	0.26 mg/L	1300 mg/L	16 mg/L	1300 mg/L	890 mg/L
5120111160040	WBU160-0105	10/24/2000	AA02666	<10 mg/L	<5 mg/L	6.3 mg/L (HJ)	<0.005 mg/L	0.078 mg/L	1400 mg/L	20 mg/L	1500 mg/L	350 mg/L
5120111160040	WBU160-0106	10/24/2000	AA02667	150 mg/L	18 mg/L	11 mg/L (HJ)	<0.005 mg/L	0.11 mg/L	280 mg/L	<4 mg/L	240 mg/L	40 mg/L
5120111160040	WBU160-0109	10/24/2000	AA02668	220 mg/L	17 mg/L	23 mg/L (HJ)	<0.005 mg/L	0.17 mg/L	370 mg/L	8 mg/L	390 mg/L	77 mg/L
5120111160040	WBU160-0111	10/25/2000	AA02669	120 mg/L	25 mg/L (J)	11 mg/L	<0.005 mg/L (HJB)	0.098 mg/L	300 mg/L	15 mg/L	300 mg/L	87 mg/L
5120111160040	WBU160-0113	10/25/2000	AA02670	60 mg/L	34 mg/L (J)	8.9 mg/L	<0.005 mg/L (HJB)	0.13 mg/L	170 mg/L	15 mg/L	170 mg/L	36 mg/L
5120111160040	WBU160-0116	10/25/2000	AA02671	110 mg/L	14 mg/L (J)	54 mg/L	<0.005 mg/L (HJB)	0.066 mg/L	350 mg/L	10 mg/L	320 mg/L	70 mg/L
5120111160050	WBU160-0069	10/24/2000	AA02621	80 mg/L	14 mg/L	11 mg/L	<0.005 mg/L (HJ)	<0.03 mg/L	130 mg/L	5 mg/L	140 mg/L	14 mg/L
5120111160050	WBU160-0070	10/24/2000	AA02623	140 mg/L	9.4 mg/L	2.4 mg/L	<0.005 mg/L (HJ)	<0.03 mg/L	1800 mg/L	27 mg/L	1800 mg/L	1200 mg/L (HJ)
5120111160050	WBU160-0071	10/24/2000	AA02624	120 mg/L	16 mg/L	6.6 mg/L	<0.005 mg/L (HJ)	0.039 mg/L	410 mg/L	12 mg/L	440 mg/L	200 mg/L
5120111160050	WBU160-0072	10/16/2000	AA02625	130 mg/L	<5 mg/L	6.1 mg/L	<0.005 mg/L	0.088 mg/L	280 mg/L	11 mg/L	290 mg/L	92 mg/L
5120111160050	WBU160-0073	10/16/2000	AA02626	100 mg/L	16 mg/L	3.4 mg/L	<0.005 mg/L	0.14 mg/L	510 mg/L	22 mg/L	530 mg/L	270 mg/L
5120111160050	WBU160-0074	10/16/2000	AA02627	80 mg/L	<5 mg/L	5.5 mg/L	<0.005 mg/L	0.15 mg/L	230 mg/L	34 mg/L	250 mg/L	79 mg/L
5120111160050	WBU160-0076	10/16/2000	AA02629	130 mg/L	7.9 mg/L	6.8 mg/L	<0.005 mg/L	0.061 mg/L	290 mg/L	<4 mg/L	290 mg/L	84 mg/L
5120111160050	WBU160-0079	10/16/2000	AA02631	70 mg/L	<5 mg/L	13 mg/L	<0.005 mg/L	0.065 mg/L	150 mg/L	11 mg/L	130 mg/L	12 mg/L
5120111160050	WBU160-0081	10/24/2000	AA02632	210 mg/L	11 mg/L	1.9 mg/L	<0.005 mg/L (HJ)	<0.03 mg/L	730 mg/L	12 mg/L	750 mg/L	360 mg/L
5120111160050	WBU160-0144	10/24/2000	AA02633	130 mg/L	6.1 mg/L	2 mg/L	<0.005 mg/L (HJ)	<0.03 mg/L	1700 mg/L	34 mg/L	1800 mg/L	1100 mg/L (HJ)
5120111160050	WBU160-0180	10/24/2000	AA02747	180 mg/L	<5 mg/L	2.8 mg/L	<0.005 mg/L (HJ)	<0.03 mg/L	1600 mg/L	17 mg/L	1800 mg/L	500 mg/L (HJ)
5120111160060	WBU160-0050	10/25/2000	AA02634	70 mg/L	14 mg/L	5.7 mg/L	<0.005 mg/L (HJ)	0.048 mg/L	920 mg/L	29 mg/L	1000 mg/L	1400 mg/L (HJ)
5120111160060	WBU160-0051	10/25/2000	AA02635	110 mg/L	18 mg/L	7.3 mg/L	<0.005 mg/L (HJ)	0.031 mg/L	480 mg/L	5 mg/L	470 mg/L	1200 mg/L (HJ)
5120111160060	WBU160-0053	10/25/2000	AA02636	60 mg/L	8.3 mg/L	3.7 mg/L	<0.005 mg/L (HJ)	<0.03 mg/L	1500 mg/L	34 mg/L	1600 mg/L	920 mg/L (HJ)
5120111160060	WBU160-0055	10/25/2000	AA02637	50 mg/L	14 mg/L	4.3 mg/L	<0.005 mg/L (HJ)	0.06 mg/L	1700 mg/L	58 mg/L	1600 mg/L	1000 mg/L (HJ)
5120111160060	WBU160-0057	10/25/2000	AA02638	50 mg/L	12 mg/L	2.9 mg/L	<0.005 mg/L (HJ)	0.044 mg/L	1700 mg/L	59 mg/L	1700 mg/L	1100 mg/L (HJ)
5120111160060	WBU160-0058	10/25/2000	AA02639	160 mg/L	<5 mg/L	7.9 mg/L	<0.005 mg/L (HJ)	<0.03 mg/L	1400 mg/L	7 mg/L	1500 mg/L	840 mg/L (HJ)
5120111160060	WBU160-0061	10/25/2000	AA02640	120 mg/L	11 mg/L	4.1 mg/L	<0.005 mg/L (HJ)	<0.03 mg/L	620 mg/L	6 mg/L	640 mg/L	330 mg/L
5120111160060	WBU160-0062	10/24/2000	AA02642	140 mg/L	20 mg/L	2.2 mg/L	<0.005 mg/L (HJ)	0.031 mg/L	650 mg/L	8 mg/L	840 mg/L	350 mg/L
5120111160060	WBU160-0066	10/25/2000	AA02643	150 mg/L	18 mg/L	2.4 mg/L	<0.005 mg/L (HJ)	0.041 mg/L	790 mg/L	<4 mg/L	830 mg/L	470 mg/L
5120111160060	WBU160-0067	10/25/2000	AA02644	160 mg/L	7.9 mg/L	7.2 mg/L	<0.005 mg/L (HJ)	<0.03 mg/L	1500 mg/L	8 mg/L	1600 mg/L	1000 mg/L (HJ)
5120111160060	WBU160-0159	10/24/2000	AA02645	150 mg/L	15 mg/L	2.6 mg/L	<0.005 mg/L (HJ)	0.041 mg/L	700 mg/L	13 mg/L	1500 mg/L	

14-Digit HUC	Site Name	Sample Date	Sample Number	Alkalinity	Chemical Oxygen Demand	Chloride	Cyanide (Total)	Phosphorus, Total	Total Dissolved Solids	Total Suspended Solids	Total Solids	Sulfate
5120111160070	WBU160-0044	10/24/2000	AA02696	120 mg/L	13 mg/L	8 mg/L	0.005 mg/L (J)	0.064 mg/L	820 mg/L	16 mg/L	960 mg/L	450 mg/L
5120111160070	WBU160-0047	10/24/2000	AA02697	80 mg/L	19 mg/L	2.2 mg/L	<0.005 mg/L (J)	0.11 mg/L	100 mg/L	22 mg/L	120 mg/L	22 mg/L
5120111160070	WBU160-0083	10/24/2000	AA02698	120 mg/L	22 mg/L	6.9 mg/L	<0.005 mg/L (J)	0.13 mg/L	310 mg/L	10 mg/L	380 mg/L	110 mg/L
5120111160070	WBU160-0155	10/24/2000	AA02699	100 mg/L	6.8 mg/L	77 mg/L	<0.005 mg/L (J)	0.14 mg/L	350 mg/L	<4 mg/L	440 mg/L	59 mg/L
5120111160070	WBU160-0156	10/24/2000	AA02700	120 mg/L	15 mg/L	70 mg/L	<0.005 mg/L (J)	0.15 mg/L	350 mg/L	4 mg/L	410 mg/L	63 mg/L
5120111160070	WBU160-0157	10/24/2000	AA02701	50 mg/L	21 mg/L	12 mg/L	<0.005 mg/L (J)	0.095 mg/L	140 mg/L	14 mg/L	150 mg/L	30 mg/L
5120111160070	WBU160-0158	10/24/2000	AA02702	120 mg/L	11 mg/L	19 mg/L	<0.005 mg/L (J)	0.033 mg/L	380 mg/L	10 mg/L	400 mg/L	110 mg/L
5120111160080	WBU160-0043	10/25/2000	AA02703	220 mg/L	15 mg/L	11 mg/L	<0.005 mg/L (J)	0.14 mg/L	1300 mg/L	18 mg/L	1500 mg/L	730 mg/L
5120111160080	WBU160-0045	10/25/2000	AA02704	40 mg/L	19 mg/L	6.9 mg/L	<0.005 mg/L (J)	0.064 mg/L	100 mg/L	9 mg/L	110 mg/L	16 mg/L
5120111160080	WBU160-0150	10/25/2000	AA02705	130 mg/L	11 mg/L	56 mg/L	<0.005 mg/L (J)	0.14 mg/L	400 mg/L	9 mg/L	430 mg/L	110 mg/L (HJ)
5120111160080	WBU160-0151	10/25/2000	AA02706	120 mg/L	13 mg/L	45 mg/L	<0.005 mg/L (J)	0.12 mg/L	530 mg/L	6 mg/L	390 mg/L	60 mg/L
5120111160080	WBU160-0154	10/25/2000	AA02707	30 mg/L	<5 mg/L	3.9 mg/L	<0.005 mg/L (J)	<0.03 mg/L	280 mg/L	12 mg/L	320 mg/L	190 mg/L
5120111160090	WBU160-0017	10/26/2000	AA02916	130 mg/L	14 mg/L	8.1 mg/L		0.05 mg/L	580 mg/L	5 mg/L	590 mg/L	480 mg/L (HJ)
5120111160090	WBU160-0018	10/26/2000	AA02918	100 mg/L	13 mg/L	4.9 mg/L	<0.005 mg/L (HJ)	<0.03 mg/L	600 mg/L	6 mg/L	640 mg/L	250 mg/L (HJ)
5120111160090	WBU160-0020	10/26/2000	AA02919	110 mg/L	8.3 mg/L	8.2 mg/L	<0.005 mg/L (HJ)	<0.03 mg/L	1200 mg/L	20 mg/L	1400 mg/L	130 mg/L (HJ)
5120111160090	WBU160-0021	10/26/2000	AA02920	190 mg/L	<5 mg/L	18 mg/L	<0.005 mg/L (HJ)	0.096 mg/L	1500 mg/L	15 mg/L	1700 mg/L	1200 mg/L (HJ)
5120111160090	WBU160-0022	10/26/2000	AA02921	150 mg/L	13 mg/L	3 mg/L	<0.005 mg/L (HJ)	<0.03 mg/L	410 mg/L	5 mg/L	440 mg/L	1100 mg/L (HJ)
5120111160090	WBU160-0023	10/25/2000	AA02922	240 mg/L	14 mg/L	46 mg/L	<0.005 mg/L (HJ)	1.9 mg/L	510 mg/L	5 mg/L		200 mg/L (HJ)
5120111160090	WBU160-0024	10/25/2000	AA02924	150 mg/L	21 mg/L	13 mg/L	<0.005 mg/L (HJ)	0.12 mg/L	1200 mg/L	19 mg/L	1300 mg/L	1000 mg/L (HJ)
5120111160090	WBU160-0181	10/25/2000	AA02748	210 mg/L	<5 mg/L	4 mg/L	<0.005 mg/L (HJ)	0.033 mg/L	3700 mg/L	32 mg/L	3400 mg/L	490 mg/L (HJ)
5120111160100	WBU160-0016	10/26/2000	AA02716	100 mg/L	29 mg/L	15 mg/L	<0.005 mg/L	0.12 mg/L (J)	190 mg/L	5 mg/L	190 mg/L	22 mg/L (HJ)
5120111160100	WBU160-0028	10/26/2000	AA02715	160 mg/L	26 mg/L	40 mg/L	<0.005 mg/L	0.47 mg/L (J)	300 mg/L	6 mg/L	300 mg/L	29 mg/L (HJ)
5120111160100	WBU160-0029	10/26/2000	AA02717	90 mg/L	21 mg/L	22 mg/L	<0.005 mg/L (HJ)	0.13 mg/L (J)	200 mg/L	5 mg/L	220 mg/L	24 mg/L (HJ)
5120111160100	WBU160-0030	10/26/2000	AA02718	140 mg/L	24 mg/L (DJ)	24 mg/L	<0.005 mg/L (HJ)	0.12 mg/L (J)	240 mg/L	10 mg/L	260 mg/L	29 mg/L (HJ)
5120111160100	WBU160-0031	10/26/2000	AA02719	170 mg/L	34 mg/L	55 mg/L	<0.005 mg/L (HJ)	1.1 mg/L	300 mg/L	12 mg/L	390 mg/L	13 mg/L (HJ)
5120111160100	WBU160-0033	10/26/2000	AA02720	60 mg/L	23 mg/L	19 mg/L	<0.005 mg/L (HJ)	0.14 mg/L	180 mg/L	7 mg/L	170 mg/L	17 mg/L (HJ)
5120111160100	WBU160-0035	10/26/2000	AA02722	130 mg/L	14 mg/L	31 mg/L	<0.005 mg/L (HJ)	0.12 mg/L	240 mg/L	7 mg/L	260 mg/L	21 mg/L (HJ)
5120111160100	WBU160-0037	10/26/2000	AA02723	60 mg/L	20 mg/L	20 mg/L	<0.005 mg/L (HJ)	0.15 mg/L	160 mg/L	12 mg/L	180 mg/L	12 mg/L (HJ)
5120111160100	WBU160-0038	10/26/2000	AA02724	140 mg/L	16 mg/L	46 mg/L	<0.005 mg/L (HJ)	0.088 mg/L	270 mg/L	<4 mg/L	290 mg/L	30 mg/L (HJ)
5120111160100	WBU160-0161	10/26/2000	AA02726	140 mg/L	16 mg/L	25 mg/L	<0.005 mg/L (HJ)	0.13 mg/L	260 mg/L	<4 mg/L	260 mg/L	29 mg/L (HJ)

14-Digit HUC	Site Name	Sample Date	Sample Number	Alkalinity	Chemical Oxygen Demand	Chloride	Cyanide (Total)	Phosphorus, Total	Total Dissolved Solids	Total Suspended Solids	Total Solids	Sulfate
5120111160110	WBU160-0011	10/25/2000	AA02904	130 mg/L	16 mg/L (J)	12 mg/L (HJ)	<0.005 mg/L	0.093 mg/L	650 mg/L	16 mg/L	650 mg/L	360 mg/L
5120111160110	WBU160-0012	10/25/2000	AA02905	140 mg/L	18 mg/L (J)	12 mg/L	<0.005 mg/L (HJB)	0.072 mg/L	610 mg/L	11 mg/L	690 mg/L	360 mg/L
5120111160110	WBU160-0015	10/25/2000	AA02906	140 mg/L	18 mg/L (J)	9.2 mg/L	<0.005 mg/L (HJB)	0.078 mg/L	700 mg/L	<4 mg/L	740 mg/L	390 mg/L
5120111160110	WBU160-0146	10/25/2000	AA02907	150 mg/L	7.9 mg/L (J)	37 mg/L	<0.005 mg/L (HJB)	0.048 mg/L	340 mg/L	<4 mg/L	330 mg/L	39 mg/L
5120111160110	WBU160-0147	10/25/2000	AA02908	140 mg/L	9.8 mg/L (J)	40 mg/L	<0.005 mg/L (HJB)	0.067 mg/L	300 mg/L	<4 mg/L	310 mg/L	39 mg/L
5120111160110	WBU160-0148	10/25/2000	AA02909	150 mg/L	12 mg/L (DJ)	61 mg/L	<0.005 mg/L (HJB)	0.23 mg/L	400 mg/L	48 mg/L	450 mg/L	51 mg/L
5120111160110	WBU160-0149	10/25/2000	AA02910	150 mg/L	<5 mg/L (J)	49 mg/L	<0.005 mg/L (HJB)	0.065 mg/L (J)	310 mg/L	<4 mg/L	310 mg/L	43 mg/L
5120111160120	WBU160-0010	10/25/2000	AA02925	170 mg/L	6.8 mg/L	41 mg/L	<0.005 mg/L	0.067 mg/L	330 mg/L	12 mg/L	320 mg/L	44 mg/L
5120111160120	WBU160-0040	10/25/2000	AA02927	100 mg/L	<5 mg/L	21 mg/L	<0.005 mg/L (HJ)	0.055 mg/L	240 mg/L	8 mg/L	250 mg/L	50 mg/L
5120111160120	WBU160-0041	10/25/2000	AA02928	80 mg/L	16 mg/L	9.2 mg/L	<0.005 mg/L (HBJ)	0.071 mg/L	190 mg/L	5 mg/L	210 mg/L	62 mg/L
5120111160120	WBU160-0042	10/25/2000	AA02929	70 mg/L	22 mg/L	7.6 mg/L	<0.005 mg/L (HBJ)	0.11 mg/L	190 mg/L	50 mg/L	230 mg/L	72 mg/L
5120111160120	WBU160-0163	10/25/2000	AA02930	120 mg/L	<5 mg/L	9.9 mg/L	<0.005 mg/L (HBJ)	<0.03 mg/L	230 mg/L	15 mg/L	240 mg/L	60 mg/L
5120111160120	WBU160-0164	10/25/2000	AA02932	80 mg/L	96 mg/L	12 mg/L	<0.005 mg/L (HBJ)	0.11 mg/L	180 mg/L	25 mg/L	200 mg/L	44 mg/L
5120111160120	WBU160-0169	10/25/2000	AA02933	80 mg/L	19 mg/L	<1 mg/L	<0.005 mg/L	0.047 mg/L	220 mg/L	10 mg/L	210 mg/L	59 mg/L
5120111160120	WBU160-0170	10/25/2000	AA02934	10 mg/L	8.7 mg/L	26 mg/L	<0.005 mg/L (HBJ)	0.052 mg/L	260 mg/L	5 mg/L	280 mg/L	44 mg/L
5120111160130	WBU160-0002	10/25/2000	AA02911	120 mg/L	9 mg/L (J)	13 mg/L	<0.005 mg/L (HJB)	0.13 mg/L (J)	610 mg/L	6 mg/L	630 mg/L	320 mg/L
5120111160130	WBU160-0007	10/25/2000	AA02912	130 mg/L	7.6 mg/L (J)	13 mg/L	<0.005 mg/L (HJB)	0.14 mg/L (J)	550 mg/L	5 mg/L	610 mg/L	280 mg/L
5120111160130	WBU160-0008	10/25/2000	AA02913	130 mg/L	9 mg/L (J)	13 mg/L	<0.005 mg/L (HJB)	0.11 mg/L (J)	580 mg/L	4 mg/L	640 mg/L	320 mg/L

Note: Blank cells indicate rejected data.

Data Flags: Estimated (J), one or more QC checks or criteria was out of control (J), the parameter was found in the lab or field blank (B), the relative percent difference for this parameter was above the acceptable control limits (D), analysis performed outside of holding time (H).

## Appendix G Nutrient Laboratory Data

14-Digit HUC	Site Name	Sample Date	Sample Number	Nitrogen, Ammonia	Nitrogen, Nitrate+Nitrite	Nitrogen, Total Kjeldahl	Phosphorus, Total	Total Organic Carbon
5120111160010	WBU160-0097	10/25/2000	AA02673	<0.1 mg/L (HJ)			0.08 mg/L	5.1 mg/L
5120111160010	WBU160-0101	10/25/2000	AA02675	0.11 mg/L (HJ)			0.13 mg/L	6 mg/L
5120111160010	WBU160-0103	10/24/2000	AA02676	<0.1 mg/L (HJ)			0.16 mg/L	5.9 mg/L
5120111160010	WBU160-0110	10/24/2000	AA02677	<0.1 mg/L (HJ)			0.071 mg/L	3.8 mg/L
5120111160010	WBU160-0112	10/24/2000	AA02678	0.16 mg/L (HJ)			0.24 mg/L	7.9 mg/L
5120111160010	WBU160-0119	10/24/2000	AA02680	0.18 mg/L (HJ)			0.29 mg/L	8.5 mg/L
5120111160010	WBU160-0121	10/24/2000	AA02681	0.15 mg/L (HJ)			0.14 mg/L	6.6 mg/L
5120111160020	WBU160-0082	10/16/2000	AA02647	0.28 mg/L	0.65 mg/L (HJ)	1.2 mg/L	0.17 mg/L	6.9 mg/L
5120111160020	WBU160-0084	10/16/2000	AA02649	<0.1 mg/L	<0.01 mg/L (HJ)	1.2 mg/L	0.19 mg/L	8 mg/L
5120111160020	WBU160-0089	10/16/2000	AA02650	0.14 mg/L	0.02 mg/L (HJ)	0.41 mg/L	0.085 mg/L	5.7 mg/L
5120111160020	WBU160-0091	10/16/2000	AA02651	<0.1 mg/L	0.14 mg/L (HJ)	0.55 mg/L	0.08 mg/L	4.5 mg/L
5120111160020	WBU160-0093	10/16/2000	AA02652	0.17 mg/L	0.16 mg/L (HJ)	0.18 mg/L	0.068 mg/L	3.9 mg/L
5120111160020	WBU160-0094	10/16/2000	AA02653	0.15 mg/L	1.1 mg/L (HJ)	0.47 mg/L	0.088 mg/L	4.6 mg/L
5120111160020	WBU160-0139	10/16/2000	AA02654	<0.1 mg/L	0.25 mg/L (HJ)	1 mg/L	0.099 mg/L	6.9 mg/L
5120111160020	WBU160-0139	10/24/2000	AA02902	<0.1 mg/L (HJ)		0.5 mg/L (HJ)	0.06 mg/L	4.9 mg/L
5120111160020	WBU160-0140	10/16/2000	AA02656	0.14 mg/L	0.21 mg/L (HJ)	1.3 mg/L	0.15 mg/L	6.4 mg/L
5120111160030	WBU160-0123	10/24/2000	AA02683	<0.1 mg/L (HJ)			0.068 mg/L	4.8 mg/L
5120111160030	WBU160-0125	10/24/2000	AA02684	<0.1 mg/L (HJ)			0.099 mg/L	5.8 mg/L
5120111160030	WBU160-0126	10/24/2000	AA02685	<0.1 mg/L (HJ)			0.091 mg/L	5.2 mg/L
5120111160030	WBU160-0130	10/16/2000	AA02687			0.74 mg/L	0.15 mg/L	3.2 mg/L
5120111160030	WBU160-0132	10/16/2000	AA02689			0.58 mg/L	0.3 mg/L	3.9 mg/L
5120111160030	WBU160-0134	10/16/2000	AA02691	<0.1 mg/L (B)	0.096 mg/L (BHJ)	0.66 mg/L	0.06 mg/L	4 mg/L
5120111160030	WBU160-0135	10/16/2000	AA02692			0.47 mg/L	0.068 mg/L	4.6 mg/L
5120111160030	WBU160-0136	10/16/2000	AA02693			0.41 mg/L	0.097 mg/L	4.1 mg/L
5120111160030	WBU160-0137	10/16/2000	AA02694			0.89 mg/L	0.041 mg/L	6 mg/L
5120111160030	WBU160-0145	10/16/2000	AA02695			0.68 mg/L	0.1 mg/L	4.7 mg/L
5120111160040	WBU160-0001	10/25/2000	AA02657	0.1 mg/L (HJ)		0.53 mg/L (HJ)	0.08 mg/L	5.3 mg/L
5120111160040	WBU160-0088	10/25/2000	AA02658	<0.1 mg/L (HJ)		0.22 mg/L (HJ)	<0.03 mg/L	7.4 mg/L
5120111160040	WBU160-0090	10/24/2000	AA02659	<0.1 mg/L (HJ)		0.4 mg/L (HJ)	0.051 mg/L	3.6 mg/L
5120111160040	WBU160-0092	10/24/2000	AA02660	<0.1 mg/L (HJ)		0.37 mg/L (HJ)	<0.03 mg/L	3 mg/L
5120111160040	WBU160-0099	10/24/2000	AA02661	<0.1 mg/L (HJ)		0.62 mg/L (HJ)	0.07 mg/L	6.6 mg/L
5120111160040	WBU160-0100	10/24/2000	AA02662	<0.1 mg/L (HJ)		0.27 mg/L (HJ)	<0.03 mg/L	3.4 mg/L
5120111160040	WBU160-0102	10/24/2000	AA02663	<0.1 mg/L (HJ)		0.51 mg/L (HJ)	0.038 mg/L	3.1 mg/L
5120111160040	WBU160-0104	10/24/2000	AA02664	0.12 mg/L (HJ)		0.32 mg/L (HJ)	0.26 mg/L	2.6 mg/L
5120111160040	WBU160-0105	10/24/2000	AA02666	0.19 mg/L (HJ)		0.53 mg/L (HJ)	0.078 mg/L	2.3 mg/L
5120111160040	WBU160-0106	10/24/2000	AA02667	<0.1 mg/L (HJ)		0.48 mg/L (HJ)	0.11 mg/L	8.9 mg/L
5120111160040	WBU160-0109	10/24/2000	AA02668	<0.1 mg/L (HJ)		0.79 mg/L (HJ)	0.17 mg/L	8.2 mg/L
5120111160040	WBU160-0111	10/25/2000	AA02669	<0.1 mg/L (HJ)		0.51 mg/L (HJ)	0.098 mg/L	6 mg/L
5120111160040	WBU160-0113	10/25/2000	AA02670	<0.1 mg/L (HJ)		0.65 mg/L (HJ)	0.13 mg/L	13 mg/L
5120111160040	WBU160-0116	10/25/2000	AA02671	<0.1 mg/L (HJ)		0.26 mg/L (HJ)	0.066 mg/L	4.9 mg/L
5120111160050	WBU160-0069	10/24/2000	AA02621				<0.03 mg/L	5 mg/L
5120111160050	WBU160-0070	10/24/2000	AA02623				<0.03 mg/L	2.5 mg/L
5120111160050	WBU160-0071	10/24/2000	AA02624				0.039 mg/L	5.2 mg/L
5120111160050	WBU160-0072	10/16/2000	AA02625	<0.1 mg/L		0.75 mg/L	0.088 mg/L	5.5 mg/L
5120111160050	WBU160-0073	10/16/2000	AA02626	0.14 mg/L		0.95 mg/L	0.14 mg/L	6.1 mg/L
5120111160050	WBU160-0074	10/16/2000	AA02627	<0.1 mg/L		0.79 mg/L	0.15 mg/L	6.4 mg/L
5120111160050	WBU160-0076	10/16/2000	AA02629	<0.1 mg/L		0.16 mg/L	0.061 mg/L	2.9 mg/L

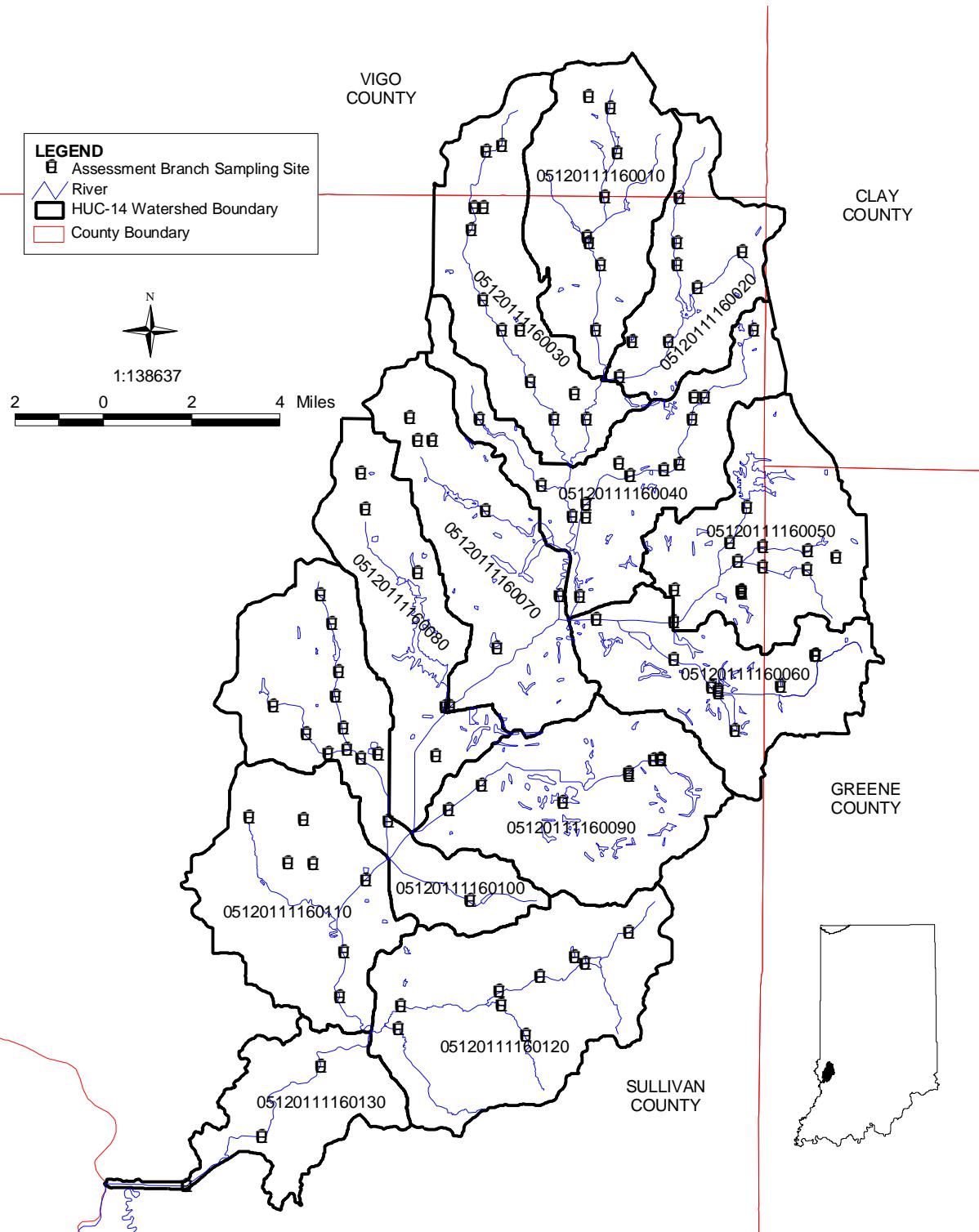
14-Digit HUC	Site Name	Sample Date	Sample Number	Nitrogen, Ammonia	Nitrogen, Nitrate+Nitrite	Nitrogen, Total Kjeldahl	Phosphorus, Total	Total Organic Carbon
5120111160050	WBU160-0079	10/16/2000	AA02631	<0.1 mg/L	1.1 mg/L (BHJ)	0.53 mg/L	0.065 mg/L	5.5 mg/L
5120111160050	WBU160-0081	10/24/2000	AA02632				<0.03 mg/L	2.8 mg/L
5120111160050	WBU160-0144	10/24/2000	AA02633				<0.03 mg/L	2.3 mg/L
5120111160050	WBU160-0180	10/24/2000	AA02747				<0.03 mg/L	2.8 mg/L
5120111160060	WBU160-0050	10/25/2000	AA02634				0.048 mg/L	4.1 mg/L
5120111160060	WBU160-0051	10/25/2000	AA02635				0.031 mg/L	5.3 mg/L
5120111160060	WBU160-0053	10/25/2000	AA02636				<0.03 mg/L	2.6 mg/L
5120111160060	WBU160-0055	10/25/2000	AA02637				0.06 mg/L	2.4 mg/L
5120111160060	WBU160-0057	10/25/2000	AA02638				0.044 mg/L	2.3 mg/L
5120111160060	WBU160-0058	10/25/2000	AA02639				<0.03 mg/L	1.9 mg/L
5120111160060	WBU160-0061	10/25/2000	AA02640				<0.03 mg/L	3.7 mg/L
5120111160060	WBU160-0062	10/24/2000	AA02642				0.031 mg/L	4.9 mg/L
5120111160060	WBU160-0066	10/25/2000	AA02643				0.041 mg/L	4.8 mg/L
5120111160060	WBU160-0067	10/25/2000	AA02644				<0.03 mg/L	2.2 mg/L
5120111160060	WBU160-0159	10/24/2000	AA02645				0.041 mg/L	4.8 mg/L
5120111160070	WBU160-0044	10/24/2000	AA02696				0.064 mg/L	5.1 mg/L
5120111160070	WBU160-0047	10/24/2000	AA02697				0.11 mg/L	6.4 mg/L
5120111160070	WBU160-0083	10/24/2000	AA02698				0.13 mg/L	9 mg/L
5120111160070	WBU160-0155	10/24/2000	AA02699				0.14 mg/L	5 mg/L
5120111160070	WBU160-0156	10/24/2000	AA02700				0.15 mg/L	5.9 mg/L
5120111160070	WBU160-0157	10/24/2000	AA02701				0.095 mg/L	6.9 mg/L
5120111160070	WBU160-0158	10/24/2000	AA02702				0.033 mg/L	5.6 mg/L
5120111160080	WBU160-0043	10/25/2000	AA02703				0.14 mg/L	7 mg/L
5120111160080	WBU160-0045	10/25/2000	AA02704				0.064 mg/L	5.6 mg/L
5120111160080	WBU160-0150	10/25/2000	AA02705				0.14 mg/L	5.9 mg/L
5120111160080	WBU160-0151	10/25/2000	AA02706				0.12 mg/L	5.2 mg/L
5120111160080	WBU160-0154	10/25/2000	AA02707				<0.03 mg/L	3 mg/L
5120111160090	WBU160-0017	10/26/2000	AA02916				0.05 mg/L	4.4 mg/L
5120111160090	WBU160-0018	10/26/2000	AA02918				<0.03 mg/L	<1 mg/L
5120111160090	WBU160-0020	10/26/2000	AA02919				<0.03 mg/L	3.1 mg/L
5120111160090	WBU160-0021	10/26/2000	AA02920				0.096 mg/L	3.9 mg/L
5120111160090	WBU160-0022	10/26/2000	AA02921				<0.03 mg/L	4.1 mg/L
5120111160090	WBU160-0023	10/25/2000	AA02922				1.9 mg/L	4.8 mg/L
5120111160090	WBU160-0024	10/25/2000	AA02924				0.12 mg/L	4.9 mg/L
5120111160090	WBU160-0181	10/25/2000	AA02748				0.033 mg/L	1.1 mg/L
5120111160100	WBU160-0016	10/26/2000	AA02716	<0.1 mg/L (HJ)			1.1 mg/L (HJ)	0.12 mg/L (J) 8.1 mg/L
5120111160100	WBU160-0028	10/26/2000	AA02715	0.32 mg/L (HJ)			1.2 mg/L (HJ)	0.47 mg/L (J) 6.1 mg/L
5120111160100	WBU160-0029	10/26/2000	AA02717	<0.1 mg/L (HJ)			0.8 mg/L (HJ)	0.13 mg/L (J) 6.4 mg/L
5120111160100	WBU160-0030	10/26/2000	AA02718	<0.1 mg/L (HJ)			0.48 mg/L (HJ)	0.12 mg/L (J) 5.6 mg/L
5120111160100	WBU160-0031	10/26/2000	AA02719	1.3 mg/L (HJ)			2.5 mg/L (HJB)	1.1 mg/L 6.8 mg/L
5120111160100	WBU160-0033	10/26/2000	AA02720	0.13 mg/L (HJ)				0.14 mg/L 7.4 mg/L
5120111160100	WBU160-0035	10/26/2000	AA02722	<0.1 mg/L (HJ)				0.12 mg/L 5.9 mg/L
5120111160100	WBU160-0037	10/26/2000	AA02723	0.14 mg/L (HJ)				0.15 mg/L 7 mg/L
5120111160100	WBU160-0038	10/26/2000	AA02724	<0.1 mg/L (HJ)				0.088 mg/L 6.1 mg/L
5120111160100	WBU160-0161	10/26/2000	AA02726	<0.1 mg/L (HJ)			0.64 mg/L (HJ)	0.13 mg/L 6.2 mg/L
5120111160110	WBU160-0011	10/25/2000	AA02904	<0.1 mg/L (HJ)			0.41 mg/L (HJ)	0.093 mg/L 4.6 mg/L

14-Digit HUC	Site Name	Sample Date	Sample Number	Nitrogen, Ammonia	Nitrogen, Nitrate+Nitrite	Nitrogen, Total Kjeldahl	Phosphorus, Total	Total Organic Carbon
5120111160110	WBU160-0012	10/25/2000	AA02905	<0.1 mg/L (HJ)		0.46 mg/L (HJ)	0.072 mg/L	4.6 mg/L
5120111160110	WBU160-0015	10/25/2000	AA02906	<0.1 mg/L (HJ)		0.46 mg/L (HJ)	0.078 mg/L	4.7 mg/L
5120111160110	WBU160-0146	10/25/2000	AA02907	<0.1 mg/L (HJ)		<0.1 mg/L (HJ)	0.048 mg/L	2.2 mg/L
5120111160110	WBU160-0147	10/25/2000	AA02908	<0.1 mg/L (HJ)		<0.1 mg/L (HJ)	0.067 mg/L	2.4 mg/L
5120111160110	WBU160-0148	10/25/2000	AA02909	<0.1 mg/L (HJ)		0.82 mg/L (HJ)	0.23 mg/L	4.3 mg/L
5120111160110	WBU160-0149	10/25/2000	AA02910	<0.1 mg/L (HJ)		<0.1 mg/L (HJ)	0.065 mg/L (J)	2.1 mg/L
5120111160120	WBU160-0010	10/25/2000	AA02925	<0.1 mg/L (HJ)			0.067 mg/L	2.4 mg/L
5120111160120	WBU160-0040	10/25/2000	AA02927	<0.1 mg/L (HJ)			0.055 mg/L	4.8 mg/L
5120111160120	WBU160-0041	10/25/2000	AA02928	0.13 mg/L (HJ)			0.071 mg/L	6 mg/L
5120111160120	WBU160-0042	10/25/2000	AA02929	0.45 mg/L (HJ)			0.11 mg/L	5.6 mg/L
5120111160120	WBU160-0163	10/25/2000	AA02930	<0.1 mg/L (HJ)			<0.03 mg/L	3 mg/L
5120111160120	WBU160-0164	10/25/2000	AA02932	<0.1 mg/L (HJ)			0.11 mg/L	8.2 mg/L
5120111160120	WBU160-0169	10/25/2000	AA02933	<0.1 mg/L (HJ)			0.047 mg/L	6 mg/L
5120111160120	WBU160-0170	10/25/2000	AA02934	<0.1 mg/L (HJ)			0.052 mg/L	3.2 mg/L
5120111160130	WBU160-0002	10/25/2000	AA02911	<0.1 mg/L (HJ)			0.13 mg/L (J)	4.4 mg/L
5120111160130	WBU160-0007	10/25/2000	AA02912	<0.1 mg/L (HJ)		0.23 mg/L (HJ)	0.14 mg/L (J)	4.3 mg/L
5120111160130	WBU160-0008	10/25/2000	AA02913	<0.1 mg/L (HJ)		0.39 mg/L (HJ)	0.11 mg/L (J)	4.5 mg/L

Note: Blank cells indicate rejected data.

Data Flags: Estimated (J), one or more QC checks or criteria was out of control (J), the parameter was found in the lab or field blank (B), the relative percent difference for this parameter was above the acceptable control limits (D), analysis performed outside of holding time (H).

## 2000 BUSSERON CREEK WATERSHED SOURCE IDENTIFICATION STUDY



**Plate 1. Busseron Creek Watershed Source Identification Study  
Sampling Locations**

Indiana Department of Environmental Management (2001). 2000 Busseron Creek Watershed Source Identification Study by Carl C. Christensen. Indiana Department of Environmental Management, Office of Water Quality, Assessment Branch, Surveys Section, Indianapolis, Indiana. IDEM 032/02/052/2001

### Map Reference

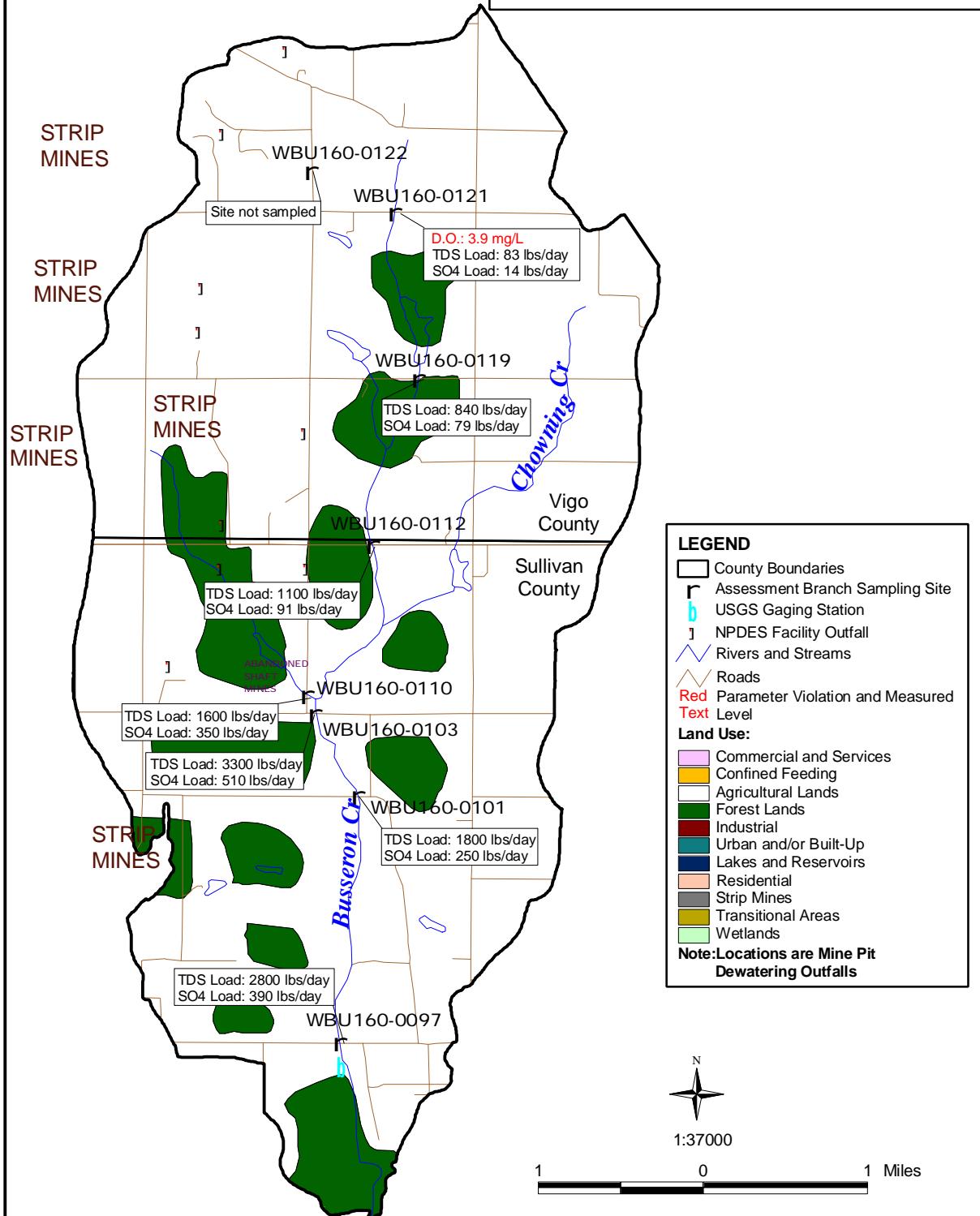
Projection: UTM Zone 16  
Datum: NAD 83  
Printed: August 6, 2001  
Plate Preparation: Stephanie Worden  
IDEM/Office of Water Quality/  
Assessment Branch/Surveys Section



## BUSSERON CREEK-CHOWNING CREEK

**05120111160010**

SULLIVAN AND VIGO COUNTIES



1:37000

1 0 1 Miles

### Plate 2. Busseron Creek-Chowning Creek Watershed Source ID Sampling Locations

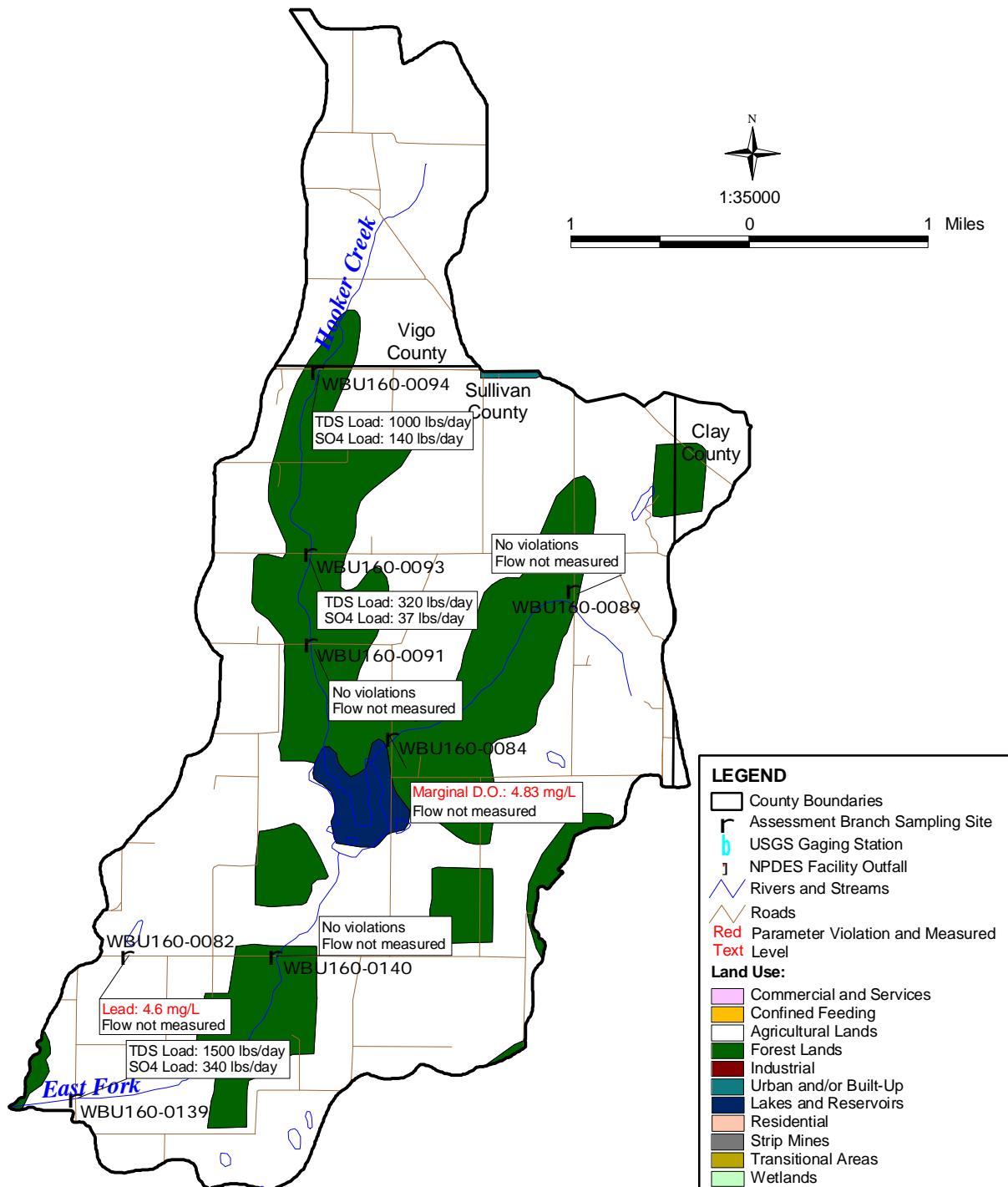
Indiana Department of Environmental Management (2001). 2000 Busseron Creek Watershed Source Identification Study by Carl C. Christensen. Indiana Department of Environmental Management, Office of Water Quality, Assessment Branch, Surveys Section, Indianapolis, Indiana. IDEM 032/02/052/2001

### Map Reference

Projection: UTM Zone 16  
Datum: NAD 83  
Printed: July 30, 2001  
Plate Preparation: Stephanie Worden  
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**EAST FORK BUSSERON CREEK-HOOKER/BOSTON CKS**  
**05120111160020**  
**CLAY,SULLIVAN AND VIGO COUNTIES**



**Plate 3. East Fork Busseron Creek-Hooker/Boston Creeks  
Watershed Source ID Sampling Locations**

Indiana Department of Environmental Management (2001). 2000 Busseron Creek Watershed Source Identification Study by Carl C. Christensen. Indiana Department of Environmental Management, Office of Water Quality, Assessment Branch, Surveys Section, Indianapolis, Indiana. IDEM 032/02/052/2001

**Map Reference**

Projection:	UTM Zone 16
Datum:	NAD 83
Printed:	July 30, 2001
Plate Preparation:	Stephanie Worden
IDEM/Office of Water Quality/ Assessment Branch/Surveys Section	



## BUSSERON CREEK-WEST FORK BUSSERON CREEK

05120111160030

VIGO AND SULLIVAN COUNTIES

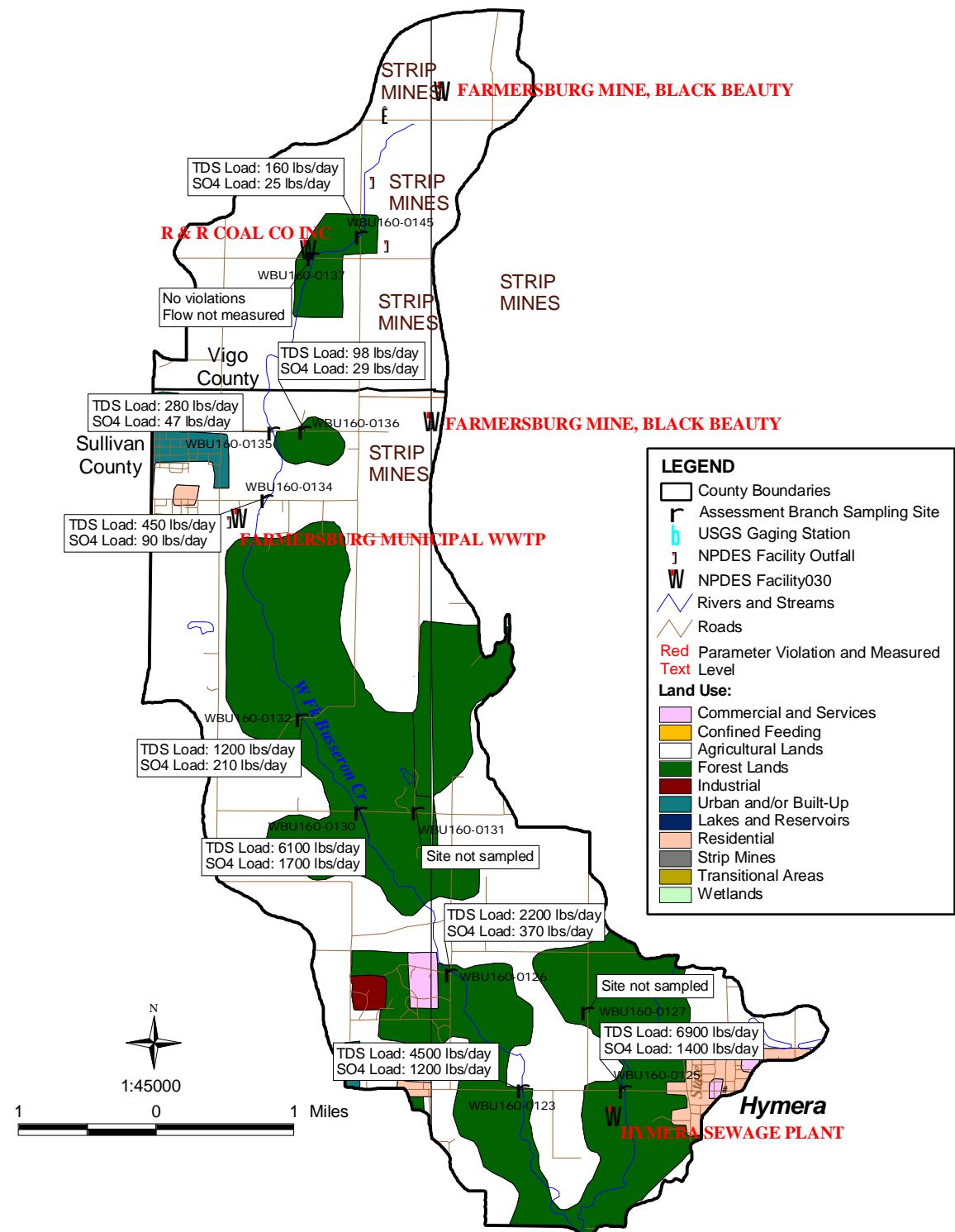


Plate 4. Busseron Creek-West Fork Busseron Creek Watershed  
Source ID Sampling Locations

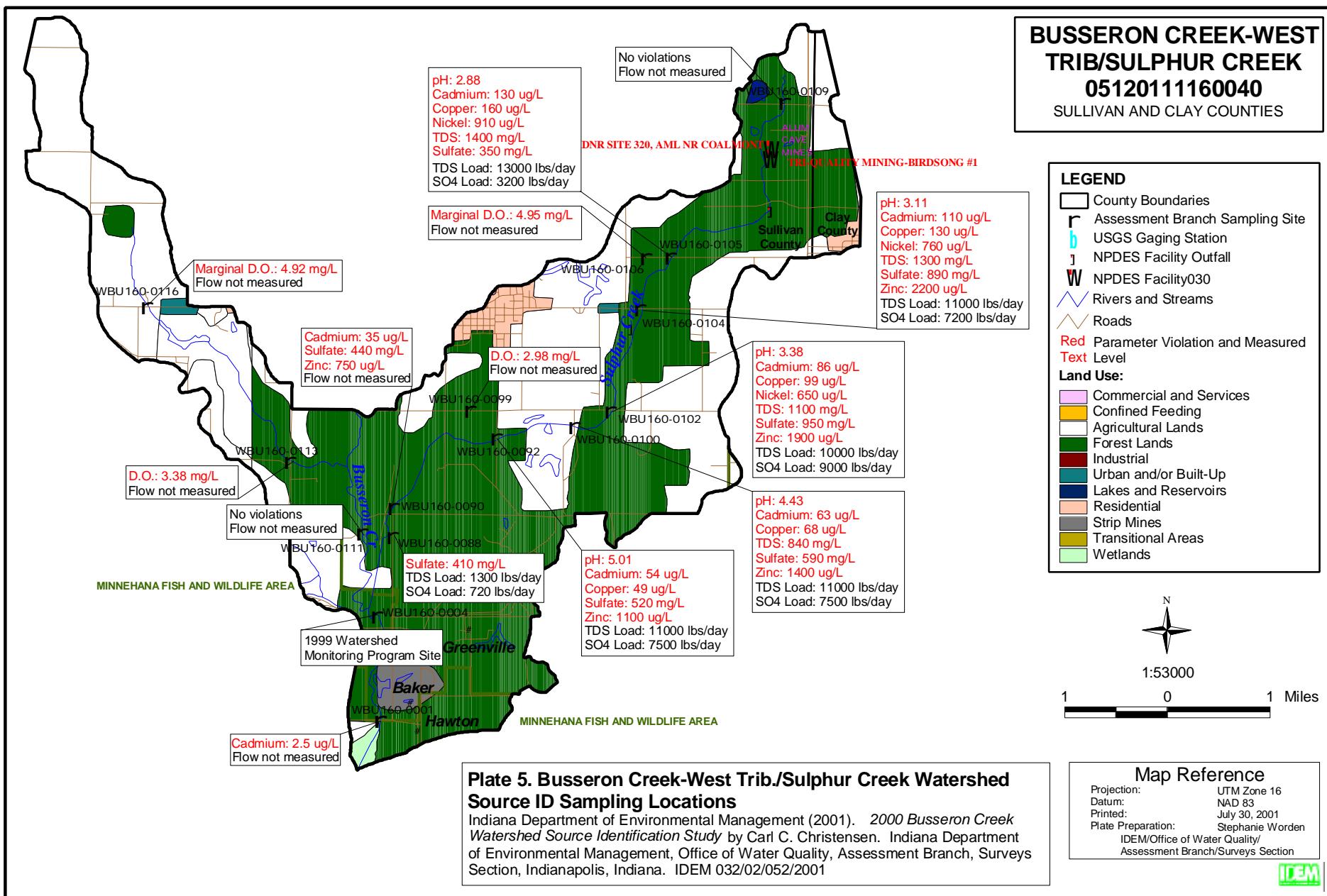
Indiana Department of Environmental Management (2001). 2000 Busseron Creek Watershed Source Identification Study by Carl C. Christensen. Indiana Department of Environmental Management, Office of Water Quality, Assessment Branch, Surveys Section, Indianapolis, Indiana. IDEM 032/02/052/2001

### Map Reference

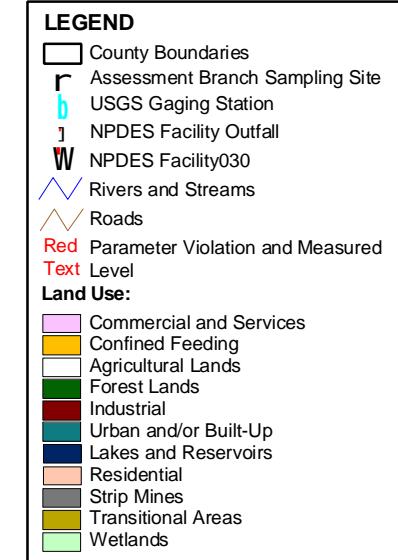
Projection:	UTM Zone 16
Datum:	NAD 83
Printed:	July 30, 2001
Plate Preparation:	Stephanie Worden
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**BUSSERON CREEK-WEST  
TRIB/SULPHUR CREEK**  
**05120111160040**  
SULLIVAN AND CLAY COUNTIES

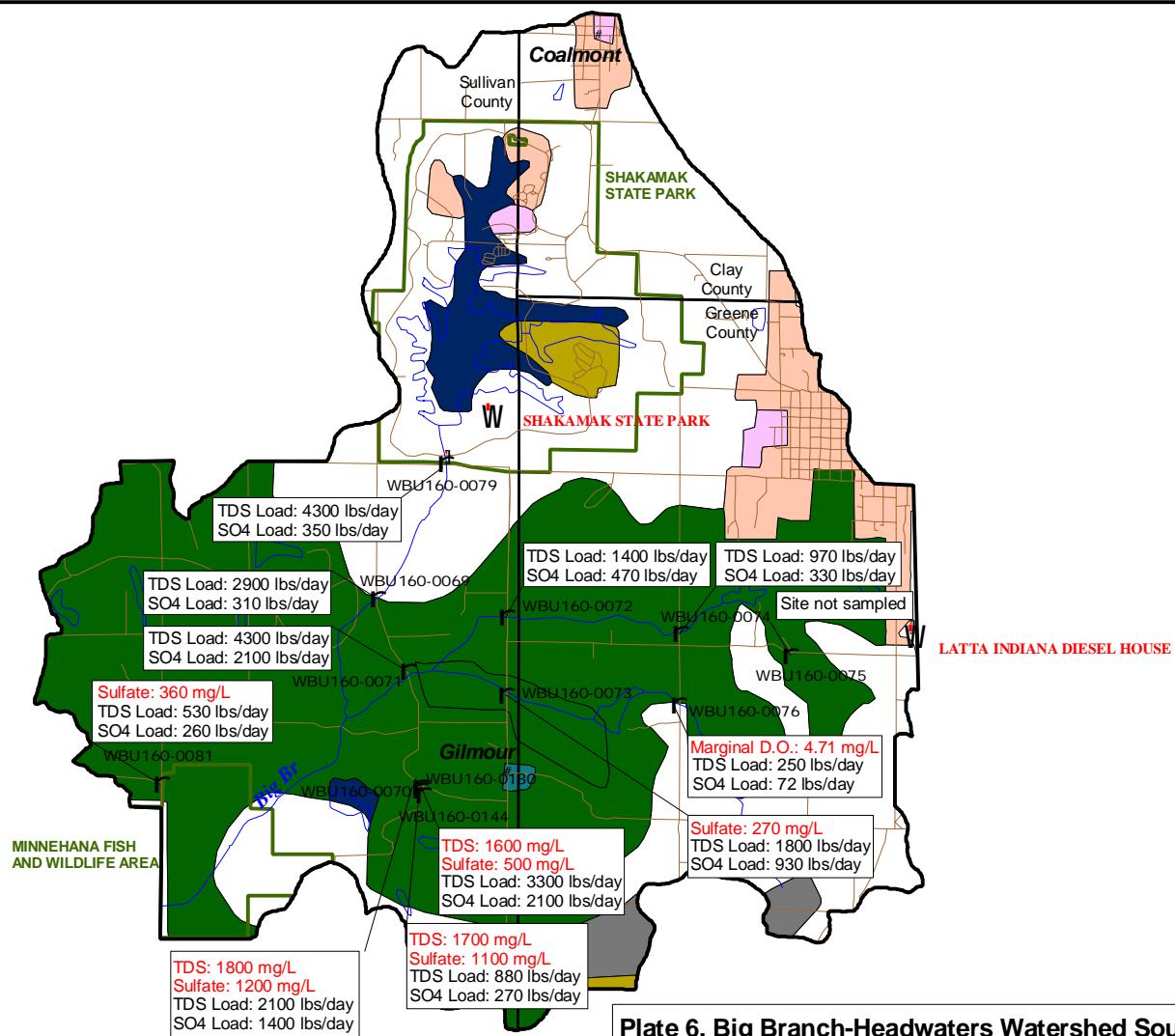


**BIG BRANCH-HEADWATERS**  
**05120111160050**  
**CLAY, GREENE AND SULLIVAN COUNTIES**



1:42000

1 Miles



**Plate 6. Big Branch-Headwaters Watershed Source ID Sampling Locations**

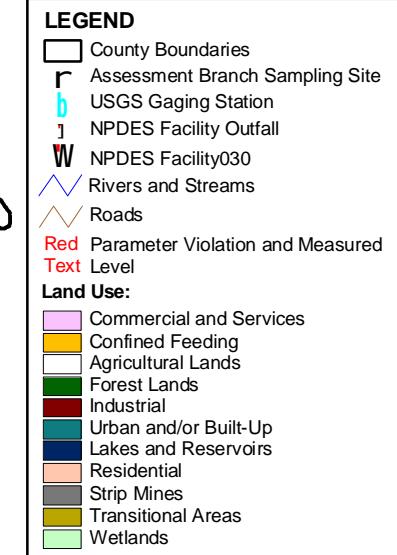
Indiana Department of Environmental Management (2001). 2000 Busseron Creek Watershed Source Identification Study by Carl C. Christensen. Indiana Department of Environmental Management, Office of Water Quality, Assessment Branch, Surveys Section, Indianapolis, Indiana. IDEM 032/02/052/2001

**Map Reference**

Projection: UTM Zone 16  
Datum: NAD 83  
Printed: July 30, 2001  
Plate Preparation: Stephanie Worden  
IDEM/Office of Water Quality/  
Assessment Branch/Surveys Section

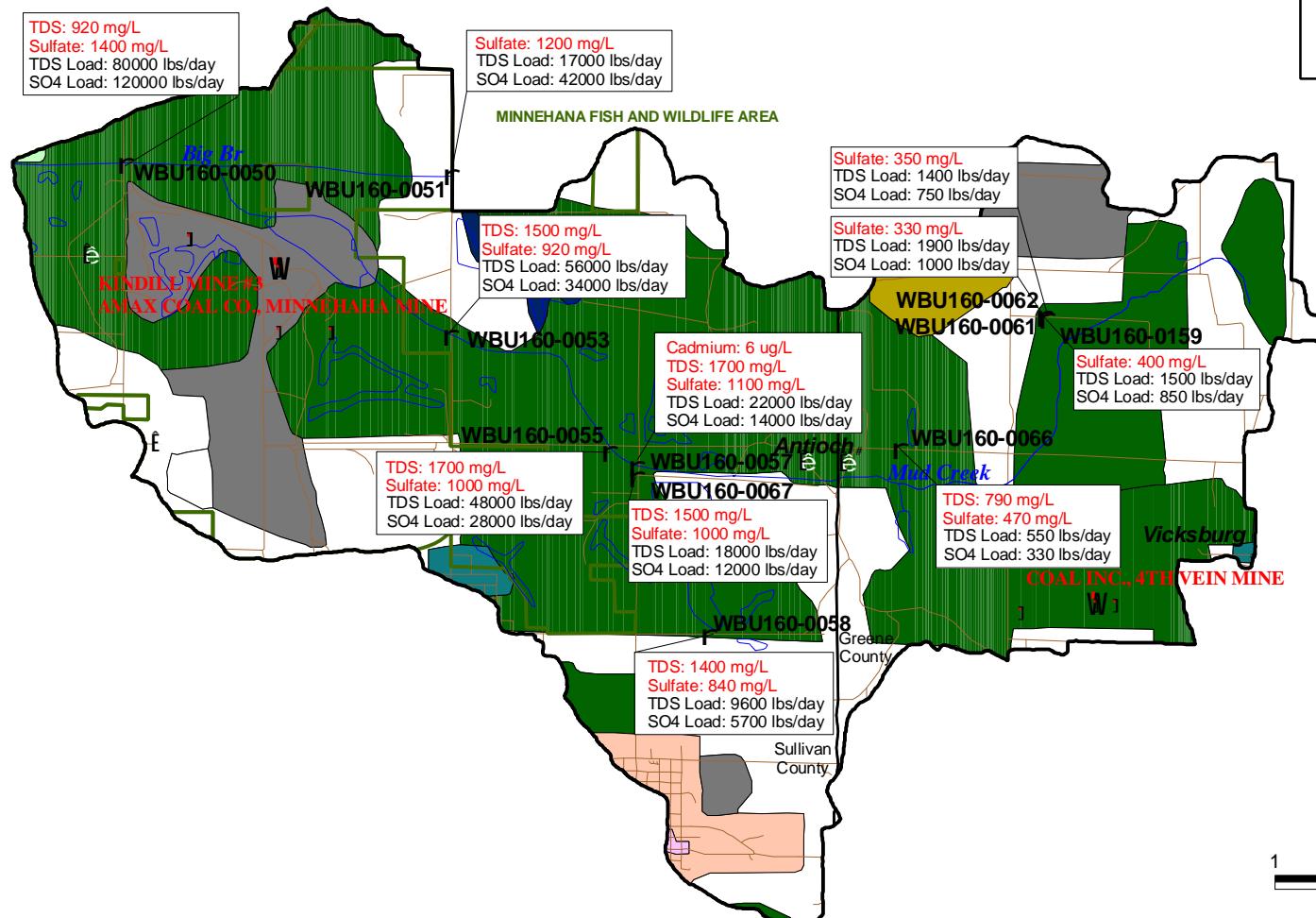


**BIG BRANCH-MUD CREEK**  
**05120111160060**  
**GREENE AND SULLIVAN COUNTIES**



1:38000

1 0 1 Miles



**Plate 7. Big Branch-Mud Creek Watershed Source ID Sampling Locations**

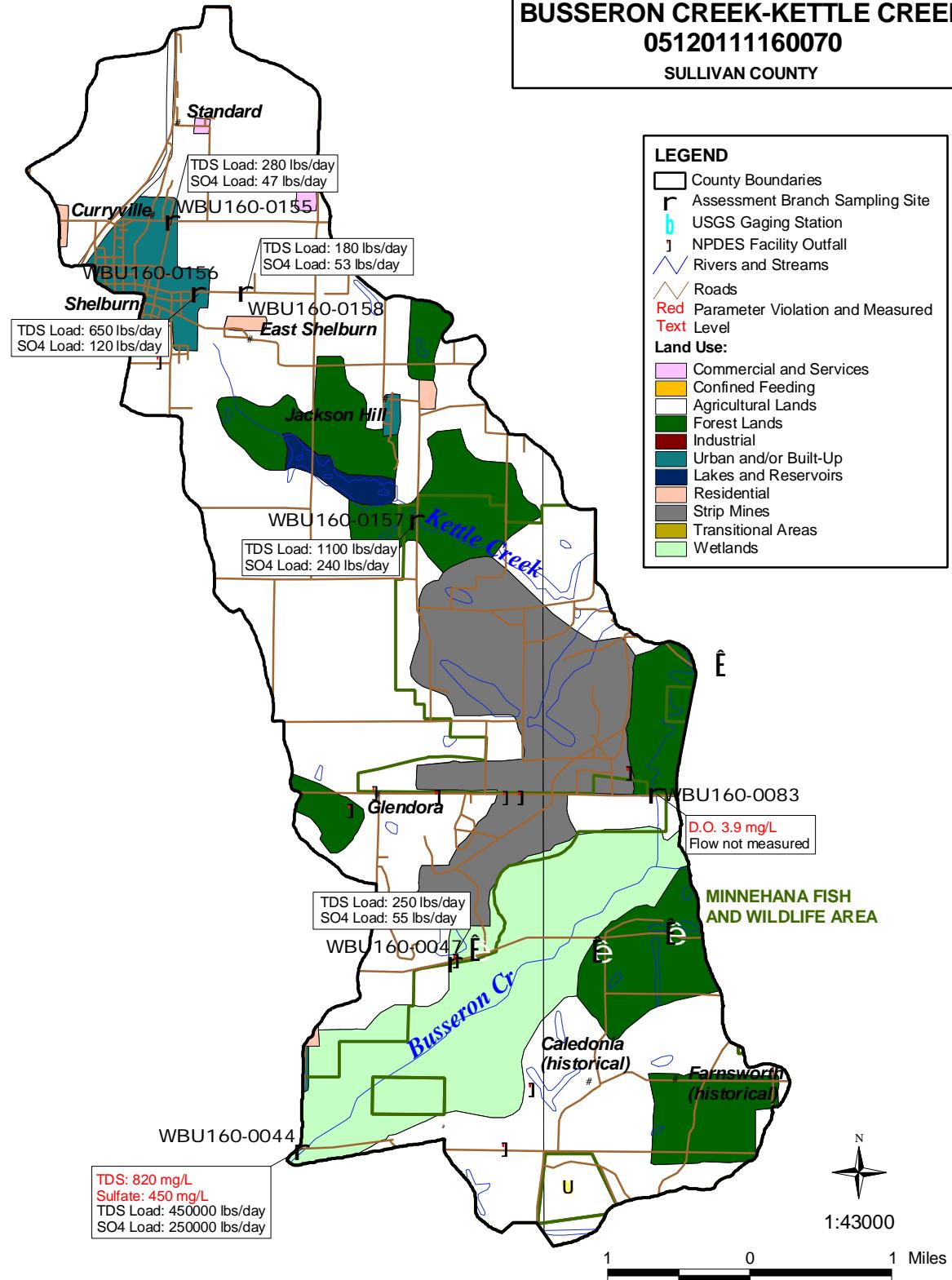
Indiana Department of Environmental Management (2001). 2000 Busseron Creek Watershed Source Identification Study by Carl C. Christensen. Indiana Department of Environmental Management, Office of Water Quality, Assessment Branch, Surveys Section, Indianapolis, Indiana. IDEM 032/02/052/2001

**Map Reference**

Projection: UTM Zone 16  
 Datum: NAD 83  
 Printed: July 31, 2001  
 Plate Preparation: Stephanie Worden  
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**BUSSERON CREEK-KETTLE CREEK**  
**0512011160070**  
**SULLIVAN COUNTY**



**Plate 8. Busseron Creek-Kettle Creek Watershed Source ID Sampling Locations**

Indiana Department of Environmental Management (2001). 2000 Busseron Creek Watershed Source Identification Study by Carl C. Christensen. Indiana Department of Environmental Management, Office of Water Quality, Assessment Branch, Surveys Section, Indianapolis, Indiana. IDEM 032/02/052/2001

**Map Reference**

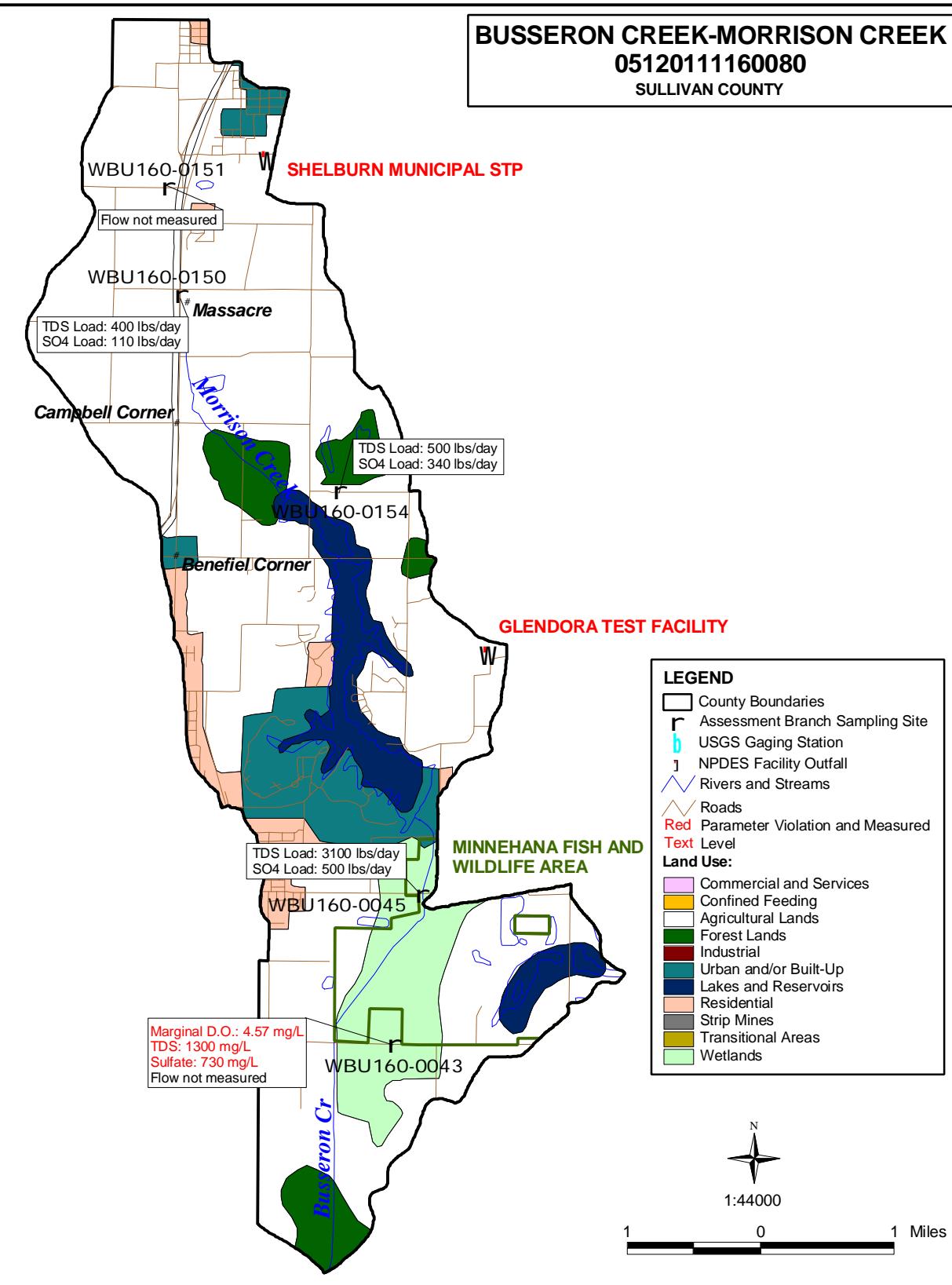
Projection: UTM Zone 16  
 Datum: NAD 83  
 Printed: August 2, 2001  
 Plate Preparation: Stephanie Worden  
 IDEM/Office of Water Quality/  
 Assessment Branch/Surveys Section



## BUSSERON CREEK-MORRISON CREEK

**05120111160080**

SULLIVAN COUNTY



**Plate 9. Busseron Creek-Morrison Creek Watershed Source ID Sampling Locations**

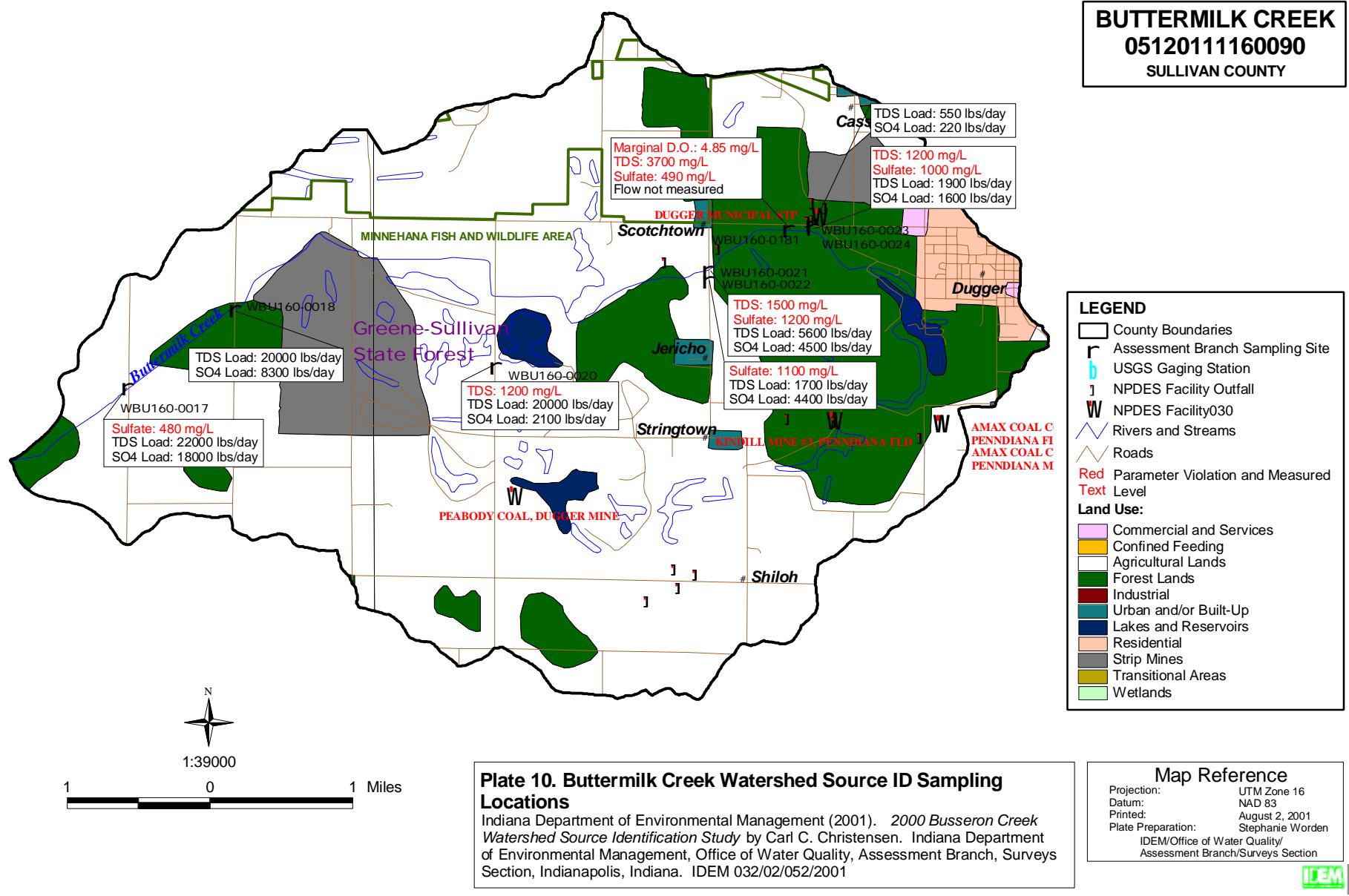
Indiana Department of Environmental Management (2001). 2000 Busseron Creek Watershed Source Identification Study by Carl C. Christensen. Indiana Department of Environmental Management, Office of Water Quality, Assessment Branch, Surveys Section, Indianapolis, Indiana. IDEM 032/02/052/2001

### Map Reference

Projection: UTM Zone 16  
Datum: NAD 83  
Printed: August 2, 2001  
Plate Preparation: Stephanie Worden  
IDEM/Office of Water Quality/  
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**BUTTERMILK CREEK**  
**05120111160090**  
**SULLIVAN COUNTY**



**Plate 10. Buttermilk Creek Watershed Source ID Sampling Locations**

Indiana Department of Environmental Management (2001). *2000 Busseron Creek Watershed Source Identification Study* by Carl C. Christensen. Indiana Department of Environmental Management, Office of Water Quality, Assessment Branch, Surveys Section, Indianapolis, Indiana. IDEM 032/02/052/2001

**Map Reference**

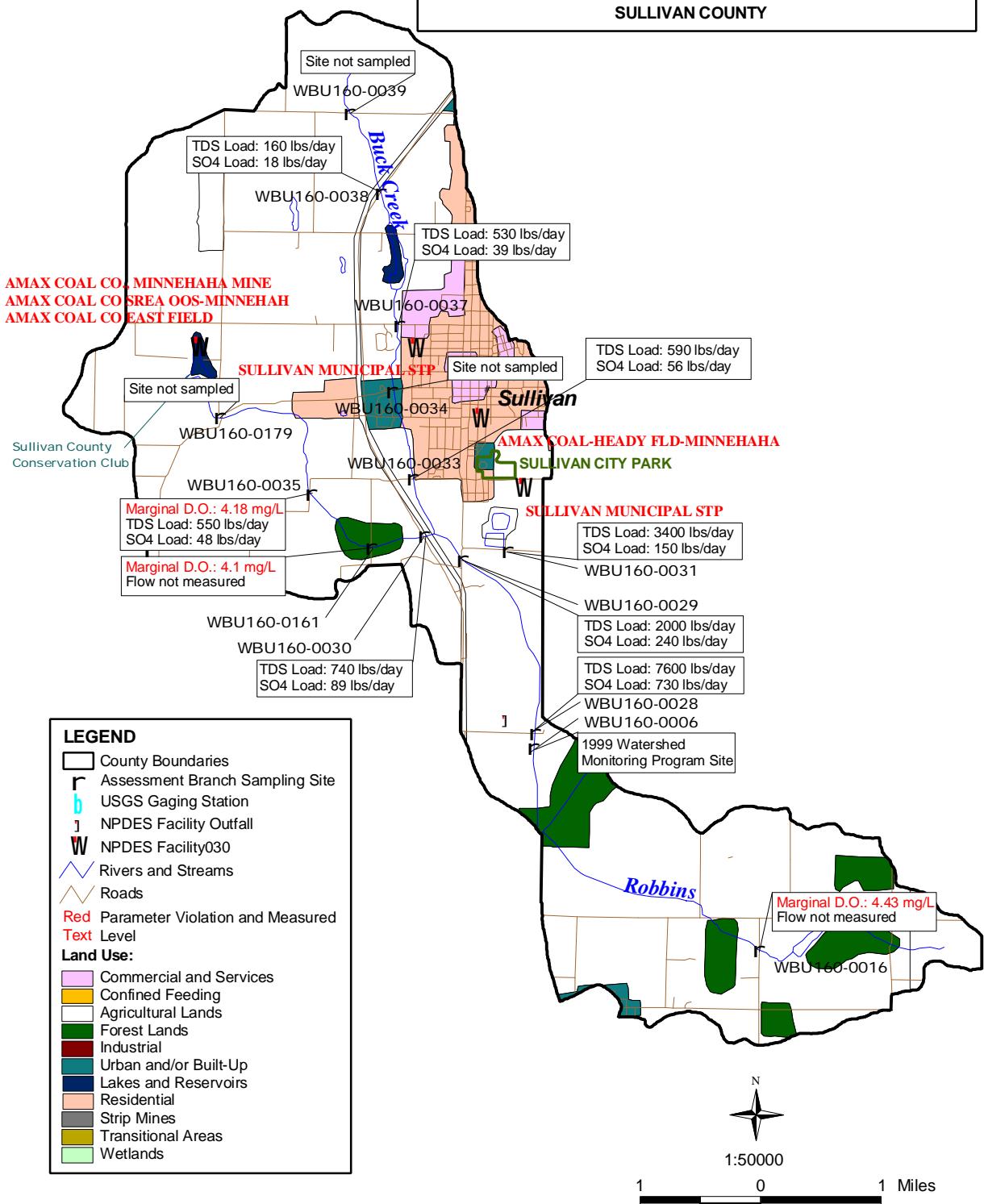
Projection: UTM Zone 16  
 Datum: NAD 83  
 Printed: August 2, 2001  
 Plate Preparation: Stephanie Worden  
 IDEM/Office of Water Quality/  
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## **BUSSERON CREEK-BUCK/ROBBINS CREEK**

05120111160100

## SULLIVAN COUNTY



## **Plate 11. Busseron Creek-Buck/Robbins Creek Watershed Source ID Sampling Locations**

Indiana Department of Environmental Management (2001). *2000 Busseron Creek Watershed Source Identification Study* by Carl C. Christensen. Indiana Department of Environmental Management, Office of Water Quality, Assessment Branch, Surveys Section, Indianapolis, Indiana. IDEM 032/02/052001

## Map Reference

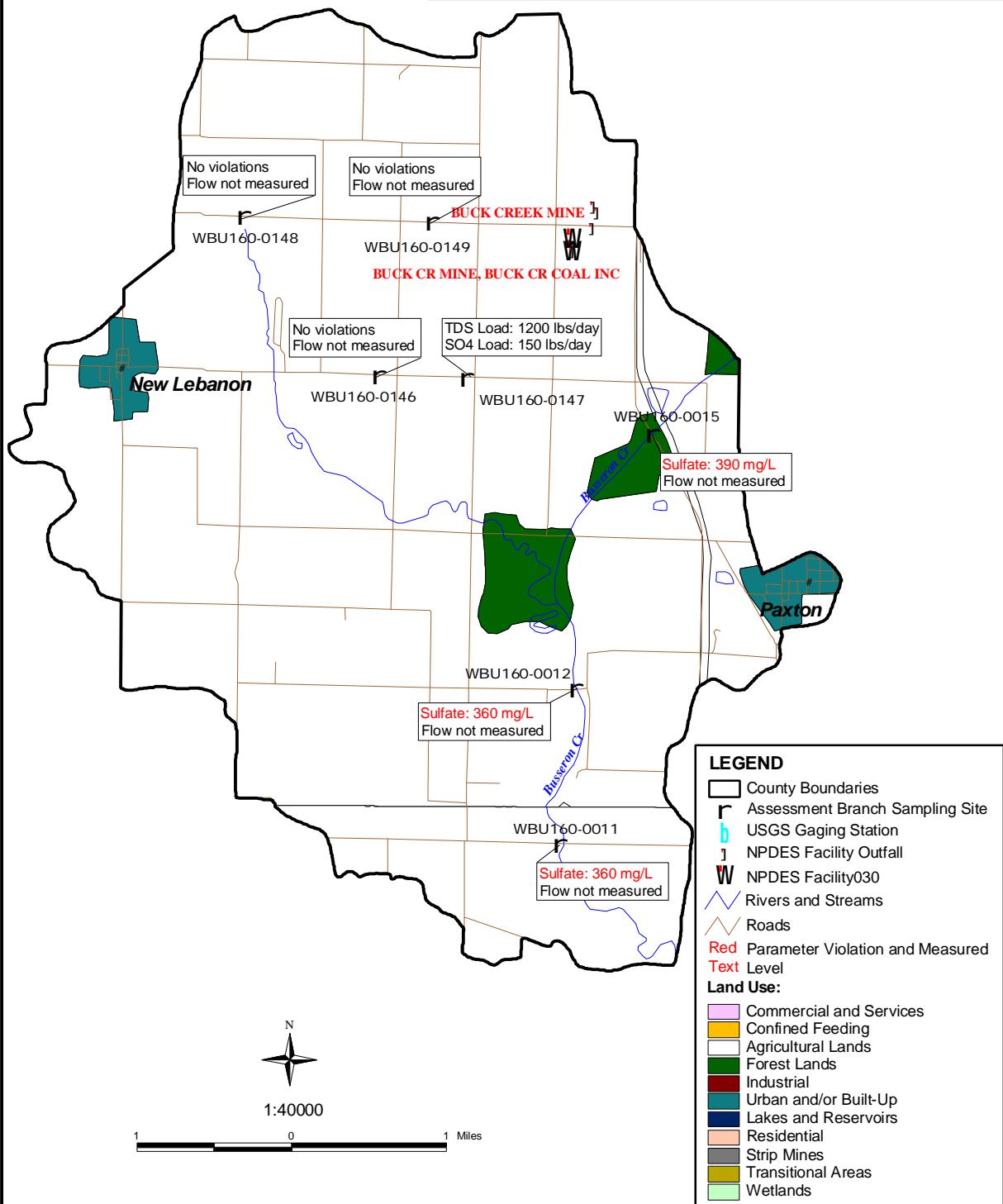
Projection: UTM Zone 16  
Datum: NAD 83  
Printed: August 3, 2001  
Plate Preparation: Stephanie Worden  
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## BUSSERON CREEK-PAXTON/NEW LEBANON

05120111160110

SULLIVAN COUNTY



**Plate 12. Busseron Creek-Paxton/New Lebanon Watershed Source ID Sampling Locations**

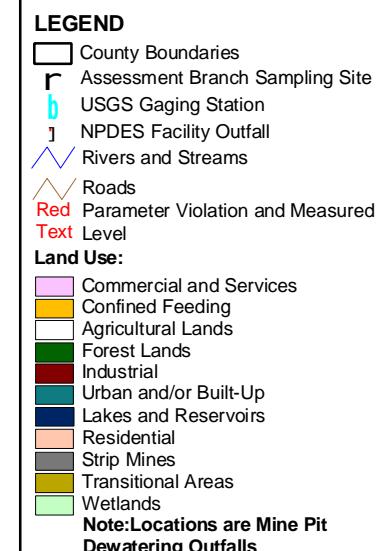
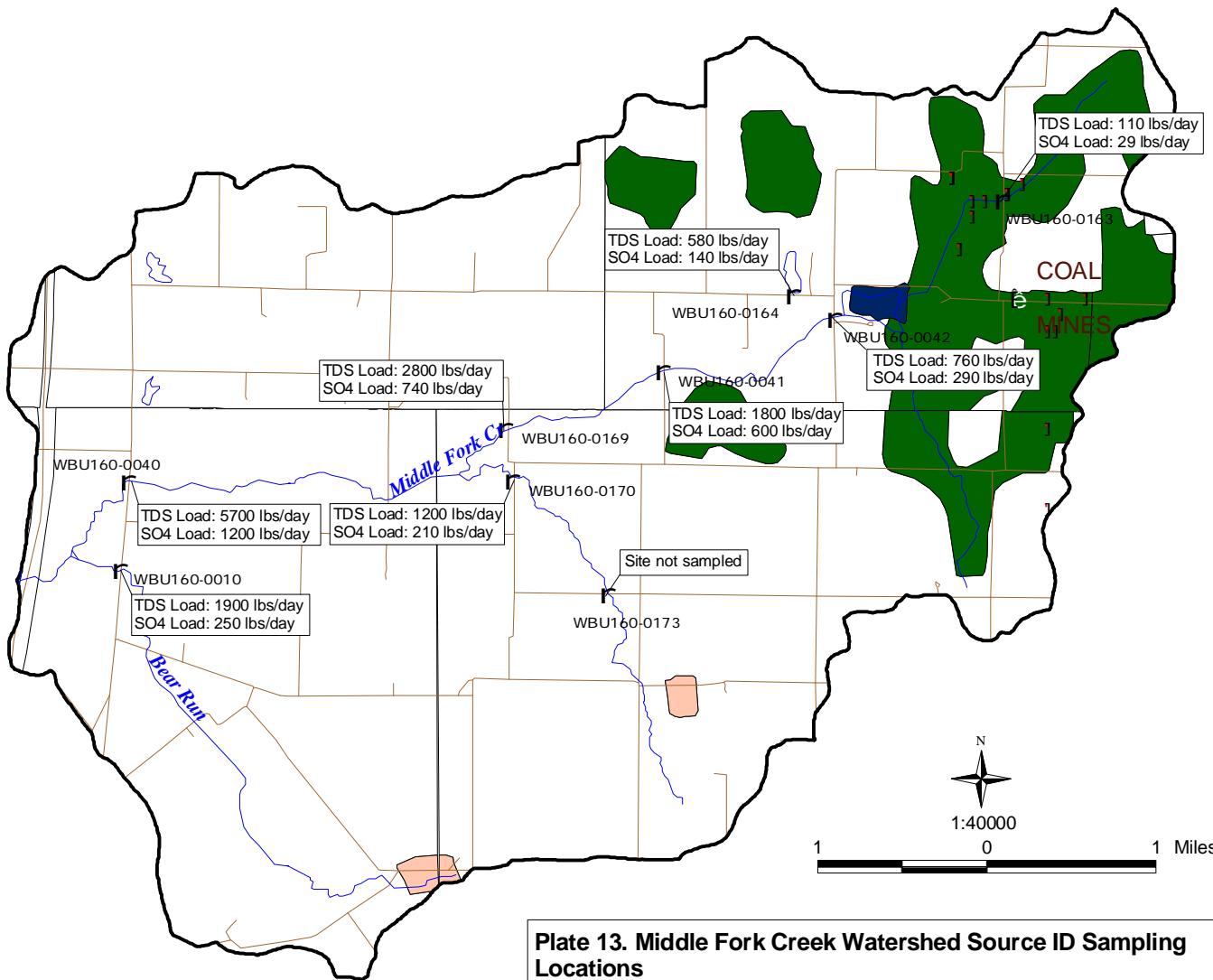
Indiana Department of Environmental Management (2001). 2000 Busseron Creek Watershed Source Identification Study by Carl C. Christensen. Indiana Department of Environmental Management, Office of Water Quality, Assessment Branch, Surveys Section, Indianapolis, Indiana. IDEM 032/02/052/2001

### Map Reference

Projection: UTM Zone 16  
Datum: NAD 83  
Printed: August 6, 2001  
Plate Preparation: Stephanie Worden  
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**MIDDLE FORK CREEK**  
**05120111160120**  
**SULLIVAN COUNTY**



**Plate 13. Middle Fork Creek Watershed Source ID Sampling Locations**

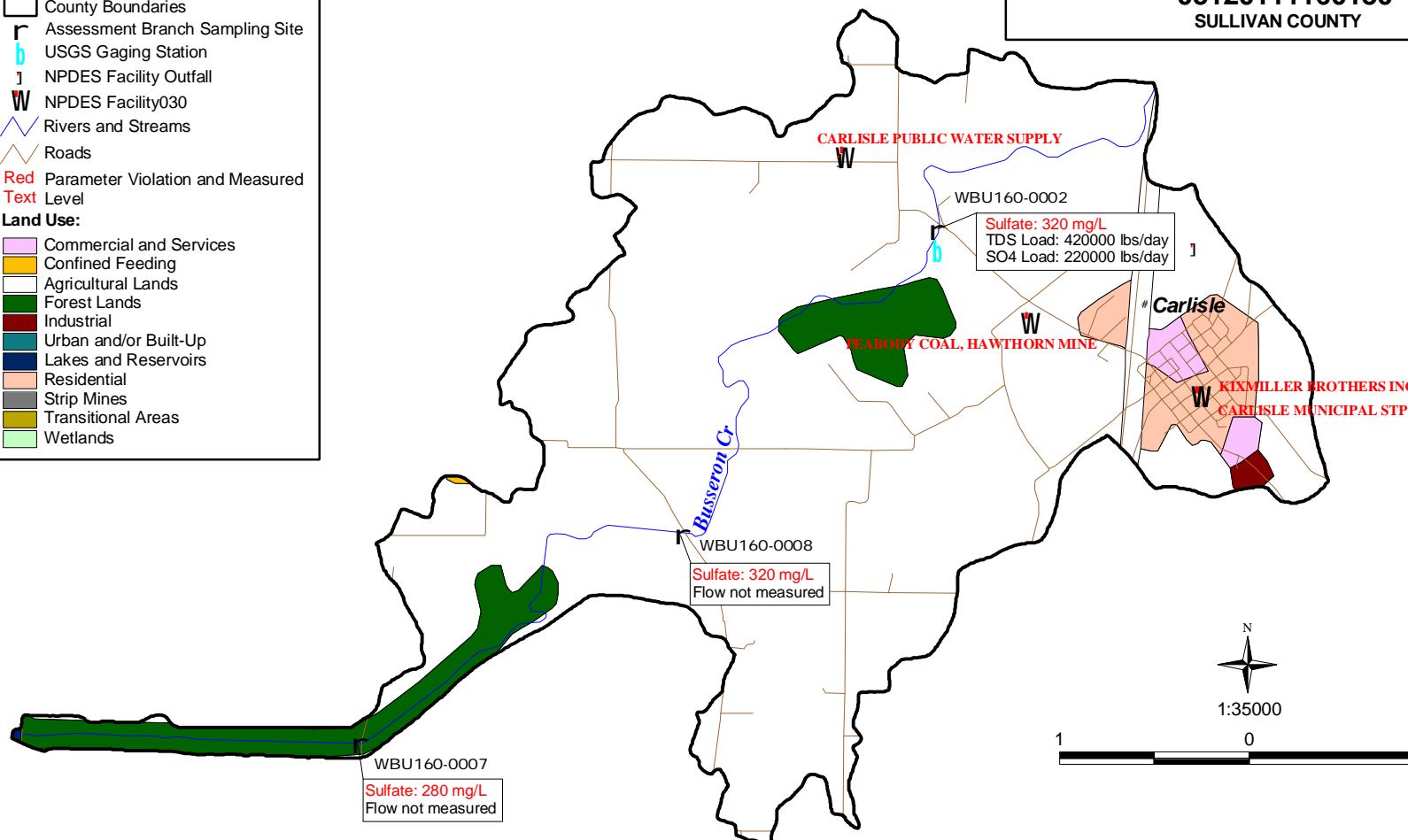
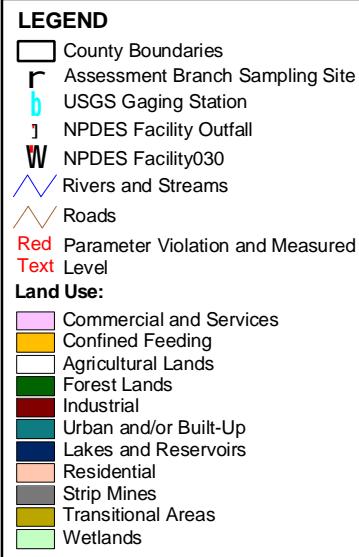
Indiana Department of Environmental Management (2001). *2000 Busseron Creek Watershed Source Identification Study* by Carl C. Christensen. Indiana Department of Environmental Management, Office of Water Quality, Assessment Branch, Surveys Section, Indianapolis, Indiana. IDEM 032/02/052/2001

**Map Reference**

Projection:	UTM Zone 16
Datum:	NAD 83
Printed:	August 6, 2001
Plate Preparation:	Stephanie Worden IDEM/Office of Water Quality/ Assessment Branch/Surveys Section



**BUSSERON CREEK-TANYARD BRANCH**  
**05120111160130**  
**SULLIVAN COUNTY**



**Plate 14. Busseron Creek-Tanyard Branch Watershed Source ID Sampling Locations**

Indiana Department of Environmental Management (2001). 2000 Busseron Creek Watershed Source Identification Study by Carl C. Christensen. Indiana Department of Environmental Management, Office of Water Quality, Assessment Branch, Surveys Section, Indianapolis, Indiana. IDEM 032/02/052/2001

**Map Reference**

Projection: UTM Zone 16  
 Datum: NAD 83  
 Printed: August 6, 2001  
 Plate Preparation: Stephanie Worden  
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